GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY

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REPORT
OF THE
TARIFF COMMISSION
ON THE
BALL BEARINGS AND STEEL BALLS INDUSTRY

BOMBAY
1952

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PERSONNEL OF THE COMMISSION

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PERSONNEL OF THE COMMISSION WHICH HEARD THE CASE

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Dr. B.V. Narayanaswamy Naidu, M.A., B.Com., Ph.D., Bar-at-Law	*Member*
Shri B.N. Adarkar, M.A. (Cantab.)	*Member*

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY

RESOLUTION
(Tariffs)

New Delhi, the 10th January, 1953.

No. 13(4)-T.B./52.- The Tariff Commission has submitted its report on the Ball Bearings and Steel Balls Industry. The enquiry has been restricted by the Commission to ball bearings of all types and sizes not exceeding 2" bore diameter and steel balls of all sizes not exceeding 9/16" diameter. Roller bearings have been excluded from the scope of present inquiry.

The recommendations of the Commission are as follows:-

(i) Protection to the ball bearings industry should be granted for a period of two years.

(ii) (a) In view of the present restrictions on imports of ball bearings, the existing revenue duties on ball bearings not exceeding 2" bore diameter adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters should be converted into protective duties at the same rates.

(b) Ball bearings of all kinds not exceeding 2" bore not otherwise specified, should also be brought under the scheme of protection and should be assessable at a protective duty of 94½ per cent. *ad valorem*.

(c) If, however, a situation arises in which the existing import restrictions cannot be continued, the National Bearing Company Ltd., Jaipur, may apply for a review of the rates of duty.

(iii) The rate of duty on adapter bearings not exceeding 2" bore diameter which are specially designed for use exclusively with power-driven machinery should be increased to 10 per cent. *ad valorem* and converted into protective duty.

(iv) Government should consider seeking release from its commitments under the GATT in regard to the import duty on ball bearings for use with shafting and adapter bearings.

(v) The existing rate of import duty on steel balls combined with severe import restrictions obtaining at present adequately safeguards the position of steel balls industry. In the event of a situation arising in which the existing import restrictions can not be continued, the National Bearing Company Ltd., may apply for a review of the position.

(vi) (a) Government should arrange to have the imports of ball bearings recorded separately in the Accounts relating to the Foreign Trade and Navigation of India under the following classification:-

(1) Upto 1" bore diameter,
(2) between 1" and 2" bore diameter, and
(3) above 2" bore diameter.

(b) The imports of steel balls should also be recorded separately under the following classification:-

(1) Steel balls upto 9/16" diameter and
(2) Steel balls above 9/16" diameter.

(vii) The value limits for quota licences allowed to the importers of ball bearings should be periodically reviewed and revised in the light of the actual quantities of ball bearings imported against those value limits.

(viii) It would not be desirable to impose a total ban on imports of even those types and sizes of bearings which the National Bearing Company Ltd. is manufacturing or can manufacture. Imports to a limited extent would be desirable not only to provide against risks of break-down in supply or stoppage of indigenous production, but also as an incentive to the indigenous industry to maintain standards of quality and to lower costs.

(ix) As the high carbon chromium steel which is the principal raw material of the ball bearings industry is a protected item, it is not possible to consider the question of abolishing or reducing the import duty levied on it.

(x) The reduction in import duty on grinding wheels industry recently effected by Government should afford sufficient relief to the industry in the use of this material.

(xi) The National Bearing Company Ltd. have made arrangements for the installation of an annealing furnace and a skinning machine for bars and wire drawing equipment for wire, which should enable them to obtain bars and wires to the required specification from the steel supplied by indigenous producers and thus become independent of imports. The Company should complete the installation of the equipment at an early date.

(xii) It would be desirable for the National Bearing Company Ltd. to establish close contacts with the consumers in India so that the Company might be able to arrange their production according to a well planned programme.

(xiii) In addition, the Company should

(a) continue its efforts to maintain high standards of quality for its products and make the necessary arrangements for carrying out accelerated life tests for their bearings and furnish life test certificates when required,

(b) make every effort to expedite deliveries of their bearings and for this purpose, maintain adequate stocks at all principal consuming centres, particularly of those bearings which are included in the restricted categories for purposes of import trade control,

(c) utilise to the maximum extent the dealers and stockists already in the trade in different parts of the country so that the indigenous bearings are readily brought to the notice of the consumers and can be quickly supplied against orders,

(d) take early steps (1) to provide the necessary technical advice to consumers in regard to the use of their ball bearings, and (2) to introduce a proper system of costing. They should record the actual hours taken in each operation. They should also exercise stricter control on consumption of stores and take measures to classify the tool room expenditure as between current and capital items.

(xiv) The National Bearing Company Ltd. should take note of the existing high ratio between the direct wage and other conversion charges of the bearings and adopt all possible precautionary measures to keep the conversion charges at as low a level as possible without impairing the quality of the bearings.

2. Government accept the recommendations of the Tariff Commission. Necessary steps will be taken to implement the recommendations as far as possible.

3. Attention of the industry is invited to recommendations (xi) to (xiv).

Sd./ S. BHOOTHALINGAM,
Joint Secretary to the Government of India.

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GOVERNMENT OF INDIA
MINISTRY OF FINANCE (REVENUE DIVISION)

NOTIFICATION
(CUSTOMS)

New Delhi, the 10th January, 1953.

No. 4.- In exercise of the powers conferred by section 23 of the Sea Customs Act, 1878 (VIII of 1878), the Central Government hereby exempts adapter bearings upto 2" bore diameter which are specially designed for use exclusively with power-driven machinery falling under item 72(3) of the First Schedule to the Indian Tariff Act, 1934 (XXXII of 1934), from the additional duties of customs leviable under section 5 of the Finance Act, 1951 (XXIII of 1951), read with section 3 of the Finance Act, 1952 (XXIX of 1952).

Sd./- E. RAJARAM,
Joint Secretary to the Government of India.

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY

NOTIFICATION
(Tariffs)

New Delhi, the 10th January, 1953.

No. 18(4)-T.B./52.- In exercise of the powers conferred by Section 3A of the Indian Tariff Act, 1934 (XXXII of 1934), the Central Government hereby raises to 94½ per cent. *ad valorem* the customs duty on ball bearings of all kinds, whether or not of British manufacture, not exceeding 2" bore other than those adapted for use as parts and accessories of motor vehicles (excluding motor cycles and motor scooters leviable under Item 72(3) of the First Schedule to the said Act, and any other law for the time being in force.

Sd./ S. BHOOTHALINGAM,
Joint Secretary to the Government of India.

GOVERNMENT OF INDIA
MINISTRY OF FINANCE (REVENUE DIVISION)

NOTIFICATION
(CUSTOMS)

New Delhi, the 10th January, 1953.

No. 3.- In exercise of the powers conferred by section 23 of the Sea Customs Act, 1878 (VIII of 1878), the Central Government hereby directs that the following further amendment shall be made in the Notification of the Government of India in the Ministry of Finance (Revenue Division) No. 15-Customs, dated the 23rd October, 1948, namely:-

In the Schedule to the said Notification, in the entry against Serial No. 1 under the heading 'Nature of article' for the words 'except belting under item 72, and wire healds and bobbins under item 72(1)' the words 'except belting under item 72, wire healds and bobbins under item 72(1) and adapter bearings upto 2" bore diameter which are specially designed for use exclusively with power-driven machinery and ball bearings of all kinds whether or not of British manufacture not exceeding 2" bore other than those adapted for use as parts and accessories of motor vehicles, (excluding motor cycles and motor scooters) and falling under item 72(3) shall be substituted.

Sd./- E. RAJARAM,
Joint Secretary to the Government of India.

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REPORT ON THE BALL BEARINGS AND STEEL BALLS INDUSTRY

Origin of the case.

The National Bearing Company Ltd., Jaipur, in their letters addressed to the Government of India in the Ministry of Commerce and subsequently in the Ministry of Commerce and Industry during the period from March, 1950 to August, 1951, represented that the ball bearings and steel balls industry was experiencing difficulties due to severe foreign competition. The Company, therefore, requested Government to assist the industry by restricting imports and levying a high protective duty on all bearings and steel balls imported into the country. The question of protection or assistance to ball bearings below 2" in diameter and steel balls industry was referred to the Tariff Board for investigation by the Government of India, in the Ministry of Commerce and Industry, by their Resolution (Tariffs) No.I-T(13)/50, dated 8th September, 1951 (*Vide* Appendix I). By their subsequent Resolution of the same number dated 17th November, 1951, the Government of India, in the Ministry of Commerce and Industry, enlarged the scope of the Tariff Board's inquiry to cover ball bearings irrespective of size (*Vide* Appendix II). This reference was pending with the Tariff Board when the Board was succeeded by the Commission. The Commission has, therefore, taken it over under Section 26 of the Tariff Commission Act, 1951.

Terms of reference.

2. The present case falls under Section 11(a) of the Tariff Commission Act (the grant of protection for the encouragement of any industry) and is governed by Section 14 of that Act [principles to be taken into account in making any inquiry under Section 11(a)].

Under the latter Section, the Commission is to have, among other matters, due regard to:-

(a) the cost of production or manufacture in the principal growing, producing or manufacturing regions of India of the commodity produced by the industry claiming protection and the cost which should be taken to be representative of the industry concerned;

(b) the approximate cost of production or manufacture in the principal growing, producing or manufacturing centres of foreign countries of the commodity which competes with the commodity produced by the industry claiming protection, if the determination of such cost is necessary for the purpose of any case;

(c) the approximate cost of import of any such competing commodity as is specified in clause (b);

(d) the price which may be deemed to be the representative fair selling price for growers, producers or manufacturers in India in respect of the industry claiming protection;

(e) the quantities of the commodity required for consumption and the quantities thereof produced in or imported into India;

(f) the effect of protection, if granted to an industry, on other industries, including cottage and other small-scale industries.

On the basis of its findings on the points referred to above, the Commission is to assess for the purpose of its Report:-

(a) the relative advantages enjoyed by the industry;

(b) the nature and extent of foreign competition;

(c) the possibility of the industry developing sufficiently within a reasonable time to be able to carry on successfully without protection;

(d) the likely effect of a protective tariff or other form of protection on the interests of the consumer or of industries using the commodity in question, as the case may be; and

(e) the desirability or otherwise of protecting the industry in the public interest.

Section 14 further provides that in recommending the grant of protection to any industry, the Commission may specify the conditions which shall be fulfilled before and after the grant of protection with particular reference to the following points, namely:-

(a) the scale of output;

(b) the quality of its products;

(c) the price charged for its products;

(d) the technological improvements required by the industry;

(e) the need for research in the process of manufacture;

(f) the training of officers, technicians and other persons employed in the industry;

(g) the use in the industry of indigenous products, whether raw or manufactured;

(h) the time within which an industry in respect of which protection has been given in advance of production, should start production; and

(i) any other matter in respect of which the Commission considers it necessary to specify conditions.

Method of inquiry.

3. (a) The Tariff Board issued the standard questionnaire for producers to the National Bearing Company Ltd., Jaipur, on 7th December, 1951. The Tariff Commission prepared a special questionnaire for producers and issued it to the National Bearing Co. Ltd., on 30th January, 1952. The questionnaires were also issued to the New Haven Steel Ball Corporation, Bombay, the other known manufacturer of steel balls. The Commission's special questionnaire for importers and consumers was issued to the known importers and consumers of ball bearings and steel balls on 30th January and 1st February, 1952, respectively. On 4th February, 1952, the Commission issued a press *communique* inviting all persons, firms and associations interested in this industry to communicate their views to the Commission on the question of protection or assistance to the industry. The Director General of Supply and Dis-

posals, Government of India, New Delhi, Director General of Ordnance Factories, Chief Controller of Imports and Exports, Indian Standards Institution and the Railway Board were asked to furnish information on certain aspects of the industry. The State Governments, Chambers of Commerce and Trade Associations were asked to send memoranda on the question of grant of protection to this industry. Data regarding c.i.f. prices of ball bearings and steel balls were collected from the Collectors of Customs. A list of persons and bodies to whom questionnaires were addressed and from whom replies or memoranda were received is given in Appendix III.

(b) Shri G.L. Mehta, Chairman, Dr. B.V. Narayanaswamy Naidu and Shri B.N. Adarkar, Members, Tariff Commission, accompanied by Dr. Rama Varma, Deputy Secretary, Shri P.L. Kumar, Development Officer (Mechanical Engineering), Ministry of Commerce and Industry (Development Wing) and Technical Adviser to the Commission for this industry and Shri R. Sundaram, Cost Accounts Officer attached to the Commission, visited the factory of National Bearing Co. Ltd., at Jaipur (Rajasthan State) from 10th to 12th April, 1952. They also held discussions with the representatives of the National Bearing Co. at Jaipur.

(c) Shri R. Sundaram, Cost Accounts Officer attached to the Commission, visited the factory of National Bearing Co. at Jaipur between 12th and 31st March, 1952, and examined the cost of production of ball bearings and steel balls manufactured by them.

(d) A public inquiry was held in Bombay at the Commission's office on 5th, 6th and 7th May, 1952. A list of persons who attended the inquiry is given in Appendix IV. On 8th and 9th May, 1952, discussions were held *in camera* with the representatives of the National Bearing Company regarding the cost of production of ball bearings and steel balls manufactured by them. Discussions were also held between 9th and 12th May with the representatives of leading importers separately regarding their c.i.f. prices and landed costs, selling prices, and discounts allowed. On 23rd May, 1952 the Commission discussed the basis of estimating demand for ball bearings used in chaff-cutters and flour mills with the representatives of Iron, Steel and Hardware Merchants' Chambers of India, Bombay.

(e) During the public inquiry, the Commission was informed that Japan had been exporting ball bearings and steel balls to India at prices which were comparatively low. Statistics of recent exports from Japan to India and information regarding the latest c.i.f. prices (Indian port) of ball bearings and steel balls with the break-down into f.o.b. price, freight, etc., were, therefore, sought from the Indian Embassy at Tokyo.

Scope of the inquiry.

4. As stated in para. 1 above, the scope of the inquiry was extended to include all sizes of ball bearings by the Government of India Resolution No. I-T(13)/50, dated 17th November, 1951. Messrs. National Bearing Co. Ltd., Jaipur, represented to the Government of India in their letter dated 6th March, 1952 that roller bearings also should be included within the scope of the inquiry. The Government of India, however, did not accept this suggestion (*Vide* Appendix V). The Company raised the point again at the public inquiry and contended that roller bearings could be substituted for ball bearings. After discussion, it was generally agreed that there was no serious risk of ball bearings being substituted by roller bearings and, therefore, the exclusion of roller bearings from the scope of the present inquiry would not affect adversely the position of the ball bearings industry.

The representatives of importers and consumers present at the public inquiry stated that the National Bearing Co. were manufacturing only a few sizes and types of ball bearings out of over a thousand types and sizes which were being imported into the country. They further pointed out that the indigenous manufacturer could not expand the present range of production except at a very high cost and that the scope of the inquiry should, therefore, be limited to the sizes and types of ball bearings, which were being manufactured in India. The importers added that the adapter bearings, the rate of duty on which was bound at 10 per cent under GATT, should also be excluded from the scope of the inquiry. The Company, however, urged that if the scope were limited to the sizes of ball bearings at present manufactured, the future progress of the industry would be hampered. The Company also asked for the inclusion of adapter type bearings on the ground that these were manufactured in the country. We consider that it would be difficult for the Company to manufacture all the sizes of bearings which are being imported at present. We are also advised by the Customs authorities that any differentiation of duties according to types of ball bearings would give rise to administrative difficulties. Moreover, the indigenous demand and production are mainly confined to ball bearings of up to 2" diameter bore. We have, therefore, come to the conclusion that the scope of the inquiry should include ball bearings of all types and sizes not exceeding 2" bore diameter.

As regards steel balls, it was agreed at the public inquiry that the scope should include all sizes up to 9/16" diameter as the manufacture of this range of sizes has been established in the country.

History of the industry.

5. The ball bearings and steel balls industry in India is of a comparatively recent origin. Soon after the cessation of hostilities, Messrs. Birla Bros. entered into an agreement with Messrs. Hoffmann Manufacturing Co. Ltd., Chelmsford, England, for technical collaboration in starting the manufacture of ball bearings and steel balls in the country. Subsequently, on 24th April, 1946, a public limited liability company called the National Bearing Co. Ltd., was registered in West Bengal. The construction of buildings for the factory commenced at

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Jaipur early in 1948 and was completed by the middle of 1950 at a cost of over Rs. 6,50,000. The main factory buildings, in which the manufacturing processes are carried out, are fully air-conditioned to make them dust-proof and to give atmospheric conditions needed for various processes.

Messrs. Hoffmanns have planned and assisted in the entire lay-out of the plant and machinery, which includes equipment for the testing and inspection of the product at all stages from the raw materials to the finished ball bearings. The plant and machinery have cost about Rs.47,00,000. Hoffmanns have also loaned experienced technicians to the National Bearing Co., to supervise important processes and to train local personnel. Facilities have also been extended by them to train selected Indian technicians in their factory in the U.K., and a number of them have already been trained in this manner.

The National Bearing Co. commenced production in August, 1950. They did not have steady production in the beginning for want of skilled labour. Production was affected for some time by shortage of skilled labour and later, when the Korean War commenced, by the difficulties in obtaining imported raw materials. Further, the Company did not have the advantage of having adequate information about the types and sizes of ball bearings required by different classes of consumers in the country. They had also to face competition from importers who had built up large stocks of bearings in common demand. The Company were, therefore, left with large stocks and had to close the factory for a short period in February, 1952. In 1950, the Company undertook production of 19 sizes of ball bearings and 7 sizes of steel balls and the range was increased to 33 sizes of ball bearings and 17 sizes of steel balls in the following year. They have now a programme of manufacturing 4,17,000 ball bearings in 31 sizes during the eight months (May-December) of 1952. Messrs. New Haven Steel Ball Corporation, Bombay, have also started the manufacture of steel balls in their factory at Andheri, Bombay, which came into production in November, 1951. The Corporation are at present manufacturing 4 sizes of steel balls.

Raw materials.

6. The National Bearing Co. manufacture ball bearings to the standards laid down by the Hoffmann Manufacturing Co. Ltd. and their requirements of raw materials are, therefore, governed by the specifications laid down by the latter. The most important raw material used in their ball bearings and steel balls is H.C.I. (high carbon chromium steel) bars and wire. The chemical composition and physical properties of this steel have to be within very close limits. A list of the raw materials used by the Company along with the specific uses to which they are put is given below:-

H.C.I. steel, mostly bars : Inner and outer races or rings
H.C.I. steel wire : Steel balls
Mild steel rivets :
Mild steel nuts } : U.T. type bearings
Mild steel locking plates :
Mild steel tubes : Sleeves
Brass strips (brass 70/30) : Cages for small bearings
Brass tubes or brass rods (brass 70/30) : Cages for large bearings

The Jaipur factory imported its entire requirements of H.C.I. steel from the United Kingdom when it started production and has recently been importing this material from Germany also. Brass strips and finished solid cages were also imported from the U.K. in the beginning. After the outbreak of the Korean War, there were difficulties in securing adequate supplies of these materials. The firm, therefore, took steps to develop the manufacture of these materials in the country. Brass strips of the requisite quality are now produced by Messrs. Kamani Metals & Alloys Ltd., Bombay, and H.C.I. bars and wire by Bhartia Electric Steel Co. Ltd., Calcutta, and Mukund Iron & Steel Works Ltd., Bombay. The indigenous H.C.I. steel has been found to be of the correct chemical composition, but is not free from rolling defects. It is also deficient so far as dimensions and hardness are concerned. The National Bearing Co. have, therefore, arranged to instal an annealing furnace and a skinning machine for bars, and wire drawing equipment for wire. With the aid of this equipment, they will be able to obtain bars and wires to the required specification from the steel supplied by indigenous producers and thus become independent of imports. We suggest that the Company should complete the installation of the equipment at a very early date.

Forged H.C.I. rings, which are used for large sized bearings, are imported, though the firm is endeavouring to develop their production in the country. M.S. tubes have to be imported, while brass rods, strips and tubes, mild steel for rivets, sleeves and nuts are obtainable from indigenous sources. The Company purchase locking plates from a local firm.

In addition to the above-mentioned raw materials, consumable stores required include oils and greases, high speed and high carbon tools, grinding wheels, certain chemicals and emery powder. Some of these items especially the ball grinding wheels, have to be imported.

New Haven Steel Ball Corporation manufacture steel balls from steel wire imported entirely from the United States of America.

Process of manufacture.

7. A ball bearing generally consists of two rings known as outer and inner races, between which are located a rolling element, consisting of steel balls and a cage. The cage separates the balls and spaces them evenly around the periphery. In certain types of bearings, generally speaking those which are designed for use on line shaftings, sleeves, nuts and locking plates are also provided. A brief description of the processes employed in the Jaipur factory is given below:-

Ball Department: H.C.I. steel wire is fed into an automatic cold heading machine to form rough shaped balls. After annealing, the balls are filed, ground and hardened and, in the case of large balls, suitably tempered. The balls are next subjected to various finishing operations, *viz.* tumbling and lapping to obtain necessary polish and uniformity. They are then examined, tested, sorted out and packed.

The Company also propose to manufacture rivets in this department.

Turret Department: In this department rings are produced by automatic or semi-automatic processes. The automatic machines are used for bulk production of rings upto 2-5/8" outside diameter. After de-greasing, the rings are put through further operations for forming tracks for the balls, radiusing, hardening and tempering. Each ring is inspected separately by means of special gauges and jigs.

Sleeves and nuts are also produced in this department.

Grinding Department: The hardened rings have to undergo grinding operations on Surface Grinders, Centreless Grinders, Face Grinders, Inner Race Track Grinders and Lapping Machines. They are subsequently washed, dried and de-greased. In this department also each ring is subjected, after each operation, to a rigid inspection for dimensional accuracy and surface finish.

Cage Department: This department is equipped to manufacture two types of cages, *viz.,* (i) pressed type which are stamped from brass strips and used for small bearings and (ii) solid type, which are manufactured from brass bars or brass tubes and are used for large-sized bearings.

Assembly Department: The various components of the ball bearings are collected in this department for assembly into complete bearings. The number of steel balls required for each size and type of bearing are selected by the assembler and held in the cage which is then riveted. After assembly, the bearings are tested, washed in kerosene under pressure and dipped in preservative oil. They are finally wrapped in grease paper and packed in cardboard cartons.

Tool Room: The manufacture of new tools and the maintenance of the used ones is carried out in this department, which is well-equipped with Precision Lathes, Shaping Machines, Milling Machines, Drilling Machines and Grinding Machines.

Hardening Department: All the hardening and tempering processes are carried out in this department, which is located outside the main factory buildings. It is equipped with up-to-date heat treatment and tempering furnaces and with quenching tanks. It also possesses shot blasting equipment for removing the scales formed after the hardening process.

The factory has a well-equipped laboratory for physical and chemical testing of raw materials and finished product.

Uses of the product.

8. Ball bearings have extensive uses in the industrial world. They are used to overcome friction wherever there is a relative motion between two parts of a machine. Ball bearings are a necessary component of various agricultural machines, such as tractors, threshing machines, pumps, chaff-cutters and cranes. Similarly, they are used in automobiles, electrical equipment, machine tools, heavy-earth-moving machinery, internal combustion engines, textile machinery and other types of machinery.

In India the use of ball bearings has considerably increased in recent years owing to industrial development. The principal consumers of ball bearings in India are the industries manufacturing electric fans, electric motors, pumps, machine tools, chaff-cutters, sugar centrifugals and textile machinery. A large number of ball bearings is also required for the maintenance of automobiles, tractors, aeroplanes, defence equipment, flour mills, etc.

Selection of ball bearings has to be made with great care for a particular use. A variety of factors, either separately or in combination, influence the selection, such as the nature of load and speed, limiting dimensions and requirements regarding assembly and disassembly.

Steel balls like ball bearings are used to overcome friction. Bicycles, gramophone and steel furniture are among the principal products in which they are used in India.

Domestic demand.

9. The demand for ball bearings is, broadly speaking, composed of (a) demand for these bearings as original equipment of machinery and (b) demand for replacement. In India, the demand for ball bearings as original equipment comes mainly from the following industries: electric fans, electric motors, power-driven pumps, flour mills, chaff-cutters, machine tools, and textile and sugar machinery. No exact estimate of the total demand for ball bearings in India is available, but it has been possible to build up an estimate on the basis of the information furnished to the Commission by different consuming industries, the National Bearing Company, which is the only manufacturing firm and the importers. This information was verified at the public inquiry.

A large part of the total demand for ball bearings in India is accounted for by the electric fans industry; the annual requirements of this industry including replacements have been estimated at 600,000 bearings. The total annual demand of the electric motors industry for ball bearings is estimated at 50,000 numbers, and of power-driven pumps at 90,000 numbers. The demand of the flour milling industry has been estimated at 50,000 bearings per annum, and that of the machine tool industry at 3,000 bearings per annum. The textile machinery industry requires 1,900 ball bearings annually for the manufacture of ring frames, and the sugar machinery industry 500 bearings. These estimates add up to a total of a little less than 800,000 bearings. This figure does not, however, include the requirements of certain other industries such as chaff-cutters, automobiles and heavy machinery. Allowing for these, the estimated demand for ball bearings may be placed at about 900,000 numbers per annum. It may be mentioned in this connection that the actual imports of ball bearings into India by the six main importers namely, S.K.F. Ball Bearing Co., Bombay; Roberts McLean & Co., Calcutta; Guest, Keen, Williams, Ltd., Calcutta; National Bearing Co., Calcutta; Bombay Company, Calcutta; and General Motors of India, Bombay, were, according to the figures furnished by them 1,078,790 numbers in 1950 and 488,461 numbers in 1951. These figures do not include imports of Japanese bearings, for which similar information is not available. On the whole, an estimate of about 900,000 bearings for the annual demand would, therefore, appear to be reasonable. Certain estimates of demand for ball bearings for the next three years were furnished to the Commission by the manufacturers, importers and consumers and these were discussed at the public inquiry. As several consuming industries have been experiencing slackness of demand recently for their own products, we have not been able to obtain any clear indication of the trend of demand for ball bearings for the next two or three years.

Ball bearings are required by different classes of consumers in varying sizes and specifications. It has not been possible to ascertain the demand for each individual specification or series or even for individual sizes of bearings. It is, however, possible to estimate the total demand within different ranges of sizes. The annual demand for bearings below 3/8" bore diameter or 10 mm. is estimated at 25,000 to 30,000 numbers; for those between 3/8" bore diameter to 1" bore diameter (10 mm. to 25 mm.) at 550,000 to 600,000 numbers; for those between 1" bore diameter and 2" bore diameter (25 mm. to 50 mm.) at 200,000 numbers; and for those above 2" bore diameter (above 50 mm.) at about

75,000 numbers. The electric fans industry uses bearings of sizes ranging between 3/8" bore diameter and 1" bore diameter though sizes below 3/8" bore diameter are also used. Other industries like electric motors, power-driven pumps, chaff-cutting machinery, flour mills, machine tools, sugar mill machinery use bearings mainly of sizes above 1" bore diameter and up to 2" bore diameter. Ball bearings of sizes above 2" bore diameter are required mostly for heavy machinery. The automobile industry uses a variety of ball bearings of special types.

The demand for steel balls is mainly on account of their use in bicycles, both as original equipment and for replacement purposes. At the public inquiry it was estimated that 400,000 bicycles would be manufactured in India annually during the course of the next three years and the requirements of steel balls for these bicycles would be 640,000 gross per annum. In addition, steel balls would be required for replacement in the bicycles already in use and the demand on this account would be about 320,000 gross or about 50 per cent. of the demand for new bicycles. The total demand was, therefore, estimated at about one million gross steel balls per annum. We are not able to give a firm estimate of demand for the next two or three years because of the prevailing uncertainty of demand for the products of the consuming industries.

(a) Rated capacity.

10. (i) *Ball Bearings:* The capacity of the Jaipur factory for producing ball bearings depends on the capacity for turning out rings which constitutes a bottleneck in the process of manufacture. At the public inquiry, the representatives of the Company claimed that they could manufacture rings for 564,000 ball bearings per shift per annum in over 20 sizes; 460,000 bearings on the automatic and the balance on the semi-automatic machines. In addition, they could turn out 120,000 rings on single-spindle automatic lathes. This capacity was based on an average of 70 to 80 per cent.

efficiency of the automatic machines. During the discussion at the public enquiry, this average efficiency was regarded as practicable, but it was pointed out that the capacity would depend on the combination of various types and sizes of ball bearings manufactured. The larger the number of types and sizes of rings produced, the greater would be the loss in production due to change of tools and setting up time. It was also agreed that in practice the output from the plant would be reduced due to rejections in processing, which were normally 5 per cent., 9 per cent., and 1 per cent., in the Turret, Grinding and Hardening departments respectively. The Technical Adviser to the Commission carried out test check of production for a short period in February, 1952, and arrived at an estimate of 417,000 bearings per annum. This estimate was based on known combinations of sizes of bearings produced and on certain assumptions regarding loss of production due to change of tools, setting up time, etc. We have also examined this matter with reference to the Company's programme of production for eight months, from May to December, 1952 furnished to us. During this period, they propose to manufacture 417,000 bearings on the basis of double shift production on more than 50 per cent. of their plant. The capacity, therefore, works out to 52,000 bearings per month on more than 1½ shift basis or 34,670 on single shift basis. In April, 1952 the Company's production on automatics alone was 32,435 bearings on partial one shift basis. Assuming that this rate of production is maintained, the annual capacity of the automatic plant alone may be estimated at about 390,000 ball bearings per shift. Taking into account the capacity of the rest of the plant, the total annual capacity of the factory on single shift basis may be estimated at about 600,000 bearings. We, however, consider that this estimate of the capacity of the factory would require revision if the Company's programme of production is altered in respect of combination of sizes and types of bearings to be produced.

(ii) *Steel Balls:* The total capacity of the two units, *viz.*, the National Bearing Co. and New Haven Steel Ball Corporation, is estimated at 1,234,000 gross steel balls per annum on single shift basis. The National Bearing Co. have an estimated capacity of 734,000 gross steel balls per annum and New Haven Steel Ball Corporation of 500,000 gross steel balls per annum.

(b) Actual production.

The actual production of ball bearings and steel balls is given below:-

	Ball Bearings	Steel Balls
1950 (August to December)	41,009	101,711
1951	234,383	528,926
1952 (January to May)	125,057	457,620

Production at the Jaipur factory has not followed any well planned programme in the past. We were informed that the Company carried out a survey of the market requirements in India some three years ago but did not find its results to be adequate and reliable. But programme for 1952 (May-December) represents the first attempt of the Company to plan their production in advance and in drawing it up they have taken into account the demand from the principal consuming industries, *viz.* electric fans, pumps, electric motors, etc. This programme includes 31 sizes of ball bearings.

We were informed at the public inquiry that the foreign manufacturing firms are assisted in planning their production for the Indian market by the importers who maintain close contact with consumers in India and are able to anticipate their demand for about one year in advance. We consider that it would be desirable for the National Bearing Co. also to establish similar contacts so that they may be able to arrange their production according to a well-planned programme. Planned production is necessary not only to meet the major requirements of the consumers but also to make suitable arrangements for the procurement of raw materials, training of personnel, etc., well in advance of the actual production.

Quality of the indigenous product.

11. We obtained the views of all the principal consumers in India regarding the quality of the indigenous ball bearings. The matter was also discussed at the public inquiry. Some of the consumers present at the inquiry had not used the indigenous ball bearings for a sufficiently long period and in sufficient quantity and could not, therefore, give a considered opinion about the quality of the bearings. A few of their representatives regarded the quality of the indigenous product as inferior to that of the imported bearings. The consensus of opinion, however, seemed to be that the quality of indigenous bearings had greatly improved and was satisfactory.. We were informed that two main defects were noticed in the indigenous bearings in the past; firstly, the bearings had superficial defects and secondly, the fans fitted with these bearings developed a peculiar noise. The Company admitted that some of the bearings manufactured in the earlier period of production showed superficial cracks but pointed out that the complaints about the noise in the fans were found on examination to be largely due to faulty mounting of the bearings and were considerably reduced by proper guidance from the Company's technicians.

The National Bearing Co. claimed that the quality of their ball bearings was as good as that of "Hoffmann" bearings. Each bearing was marked "Hoffmann Licence" after rigid scrutiny at each stage and final inspection, and this was a sufficient guarantee of the quality of the product.

Another point raised at the inquiry was that since the life of the bearings extends over many years, it is not possible to assess their quality after use for a limited period and that, therefore, the Company should arrange for an accelerated life test of their bearings. Some representatives of the consumers were of the view that the Company should furnish a life test certificate for their bearings.

We recommend that the Company should continue its efforts to maintain high standards of quality for its products. They should also make the necessary arrangements for carrying out accelerated life tests for their bearings and furnish the life test certificate when required.

There have been no complaints from the consumers about the quality of steel balls, and at the public inquiry the representatives of consumers expressed the opinion that the quality of the indigenous product was as good as that of the imported product.

Sales and service organisation.

12. From the standpoint of the consumer of ball bearings, it is not enough that the quality of the bearings should be satisfactory and should carry a guarantee; he should also have the assurance that (i) he would be able to obtain compliance with his orders within a reasonable time, (ii) he would have the services of an efficient sales organisation at his disposal and (iii) in cases of difficulty he would be able to obtain the necessary technical advice about the specified use of bearings. We have examined these various aspects of the question. Some of the consumers of indigenous ball bearings have complained that the Company is either unable to quote any rates or indicates long periods of delivery which make it impossible for the consumers to place orders with them. This creates particular difficulties in the case of those bearings the import of which is restricted. We were also informed that the sales organisation of the Company was not satisfactory. This was stated to be due to the policy of the Company to ignore the dealers and stockists and to take practically the entire work of distribution in their own hands. We were told that this policy does not leave sufficient incentive for dealers and stockists

to sell the indigenous bearings. In this connection, it was also mentioned that sufficient stocks of the indigenous bearings included in the restricted categories for purposes of import trade control were not always maintained and that as a result difficulty was experienced in obtaining these bearings at the time when they were needed and in required quantities. Further, it was brought to our notice that while all the leading importers maintain technical staff to render advice to the consumers whenever required, the Company had no adequate arrangements for providing similar technical advice. We were shown a sample of the housings which the Bombay branch of the Company had procured locally for fitting adapter bearings manufactured by the Company and it was found on examination that the housing was of poor workmanship and finish. We mention this only as an illustration of the fact that in the absence of suitable technical staff, sales of the products of the Company are likely to be prejudiced.

We have found on examination that the present position in regard to all the matters stated above requires considerable improvement. We, therefore, recommend that the Company should make every effort to expedite deliveries of their bearings and should, for this purpose, maintain adequate stocks at all the principal consuming centres, particularly of those bearings which are included in the restricted categories for purposes of import trade control. The Company should also utilise to the maximum extent the dealers and stockists already in the trade in different parts of the country so that the indigenous bearings are readily brought to the notice of the consumers and can be quickly supplied against orders. The Company should also take steps at an early date to provide the necessary technical advice to consumers in regard to the use of their ball bearings.

Imports and import control policy
(a) Imports:

13. As pointed out earlier in this Report, ball bearings and steel balls were not manufactured in the country before August, 1950. The requirements of the country for these articles were, therefore, met entirely by imports, mostly from the U.K., the U.S.A., Sweden and Japan. The important manufacturers of ball bearings and steel balls whose products were imported were:-

(i) S.K.F.,
(ii) Hoffmann,
(iii) Ransome & Marles,
(iv) Timken,
(v) Steyer (Austrian),
(vi) Fischer,
(vii) Pollard,
(viii) Nice,
(ix) Hyatt,
(x) Holloway, and
(xi) RIV Office Di Villar (Italian).

Statistics of the quantity and value of the imports of ball bearings and steel balls are not recorded separately at present in the Accounts relating to the Foreign Trade and Navigation of India. No definite information is, therefore, available regarding the quantity and value of such imports in the past years. We have, however, received from the leading importers data of their imports of ball bearings and steel balls during 1950 and 1951, which are summarised in the statement on next page. It will be seen from this statement that the total number of ball bearings imported by the six importers was 1,078,790 numbers in 1950 and 488,461 numbers in 1951. Imports consisted mainly of ball bearings of sizes upto 2" bore (internal) diameter which formed 94 per cent. and 88 per cent. of the total imports of ball bearings during 1950 and 1951 respectively. The total quantity of steel balls imported was 260,655 gross in 1950 and 18,030 gross in 1951 out of which imports of steel balls of sizes upto 9/16" diameter were as much as

99.96 per cent. and 97.5 per cent. of the total imports during 1950 and 1951 respectively. The total imports of ball bearings and steel balls declined in 1951 and were only 45 per cent. and 7 per cent. respectively of those during 1950. The decline is attributed mainly to the restriction on imports during 1951.

STATEMENT SHOWING IMPORTS OF BALL BEARINGS AND STEEL BALLS DURING 1950 AND 1951 AS FURNISHED BY SIX IMPORTERS

Product	Size	1950 (Nos.)	1951 (Nos.)	Total (Nos.)
Ball Bearings	Upto 2" bore (internal) diameter	1,012,548	430,903	1,443,451
	Above 2" bore diameter	66,242	57,558	123,800
	TOTAL	1,078,790 (Gross)	488,461 (Gross)	1,567,251 (Gross)
Steel Balls	Upto 9/16" diameter	260,557	17,580	278,137
	Above 9/16" diameter	98	450	548
	TOTAL	2 60,655	18,030	278,685

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We recommend that Government should arrange to have the imports of ball bearings recorded separately in the Accounts relating to the Foreign Trade and Navigation of India under the following classification:-

(i) upto 1" bore diameter;
(ii) between 1" and 2" bore diameter; and
(iii) above 2" bore diameter.

Figures of imports of steel balls should also be recorded separately under the following classification:-

(i) steel balls upto 9/16" diameter; and
(ii) steel balls above 9/16" diameter.

(b) Import control policy.

The import control policy in respect of ball bearings and steel balls since July, 1951, is described below:-

(i) *Ball Bearings* - During the period July-December 1951 licences for imports from soft currency countries were granted for the imports of ball bearings of 1" and less than 1" in bore (internal) diameter on the basis of a quota of 40 per cent. of half of best year's imports. Imports against these licences were, however, restricted in the following manner:

- (i) magneto type of bearings described in Appendix VI (a) were not allowed,
- (ii) one-fourth of the face value of the licence was to be utilised for imports of types and sizes of ball bearings described in Appendix VI (b),
- (iii) the remaining three-fourths of the face value of licence was allowed to be utilised for imports of types of ball bearings of 1" and less than 1" in bore (internal) diameter other than those mentioned in (i) and (ii) above, and
- (iv) imports of ball bearings other than those mentioned in (i), (ii) and (iii) above were allowed under O.G.L. XXIII.

Component parts of ball bearings exceeding 1" in diameter and component parts of roller and taper bearings excluding plumber blocks for housing but including nuts and washers and adapter sleeves were allowed under O.G.L. XXI and O.G.L. XXIII. Component parts of ball bearings of 1" and less than 1" in diameter which were not included in above O.G.L.'s were licensed *ad hoc, i.e.*, on the basis on which licences for machinery items were issued.

During the period January-June 1952, imports of ball bearings exceeding 1" bore (internal) diameter were covered by O.G.L. XXIII for shipment upto 30th June, 1952, and imports were allowed from all countries except the Union of South Africa. Imports of ball bearings of 1" and less than 1" in bore (internal) diameter, were in the restricted category and were allowed to established importers from soft currency countries only on a quota of 30 per cent. of half of best year's imports These licences were valid only for imports of ball bearings as specified in Appendix VI (a) and (b). Ball bearings of 1" and less than 1" in bore (internal) diameter not falling within this restricted category of sizes were licensed on a quota of 70 per cent. of half of best year's imports. While component parts of ball bearings exceeding 1" in diameter and component parts of roller and taper bearings excluding plumber blocks for housing but including nuts and washers and adapter sleeves were included in O.G.L. XXIII, component parts of ball bearings of all sizes and component parts of roller and taper bearings excluding plumber blocks for housing but including nuts and washers and adapter sleeves were allowed for import from soft currency area only under O.G.L. XVI. Imports of component parts of ball bearings of 1" and less than 1" in diameter from countries other than the soft currency area were licensed *ad hoc, i.e.,* on the basis on which licences for machinery items were issued.

In the Public Notice No. 61-ITC(P.N.)/52 dated 16th June, 1952 Government stated while announcing the import control policy for the July-December 1952 period that the policy for this period in respect of ball bearings of sizes upto 2" in bore (internal) diameter would be announced later. Government also pointed out in paragraph 2 of the introduction given in the policy book for July-December 1952 that the July-December 1952 import control policy for a number of items had been reserved for later announcement. It was stated that for some of these, such as cycles and ball bearings, the policy for the January-June 1952 period had been announced only three months ago, and that the postponement of the announcement of the import policy for the July-December 1952 period would not mean a break in the continuity of imports.

Imports of ball bearings other than those for which the policy is not yet announced, are included in O.G.L. Soft. Component parts of ball bearings exceeding 2" in diameter and component parts of roller and taper bearings excluding plumber blocks for housing but including nuts and washers and adapter sleeves are included in O.G.L. XXIV. Imports of component parts of ball bearings of 2" and less than 2" in diameter are to be licensed *ad hoc*, *i.e.*, on the basis on which licences for machinery items are issued.

(ii) *Steel Balls* - During the period July-December 1951, steel balls of sizes above 11/32" in diameter were included in O.G.L. XXIII. For sizes upto 11/32" in diameter, the licences were doubled by Public Notice No. 49-ITC(PN)/51 dated the 13th March 1951 and, therefore, the import control policy in force during the previous half year was practically continued, *viz.*, licences for imports from soft currency countries were issued to established importers to the extent of 20 per cent. of half of best year's imports and applications from actual users for general licences and licences for Japan and soft currency countries were considered on an *ad hoc* basis. For the January-June 1952 period steel balls of sizes above 9/16" diameter were included under O.G.L. XXIII. No licences were granted for imports of steel balls of other sizes excepting for commitments made before the withdrawal of steel balls between 11/32" to 9/16" diameter from the O.G.L. During the current half year, *viz.*, July-December 1952, imports of steel balls of sizes above 9/16" diameter in machined and polished condition are allowed under O.G.L. Soft. No licences are to be issued for import of steel balls of sizes upto 9/16" diameter.

Existing rates of import duties.

14. Ball bearings and steel balls are assessed to import duty under different item numbers of the Indian Customs Tariff (35th Issue) according to the following classification:-

	I.C.T. Item No.
I. BALL BEARINGS:	
(a) Ball bearings upto 2" bore (internal) diameter.	75(10)(v)
(b) Ball bearings of over 2" bore (internal) diameter.	72(3)
II. STEEL BALLS:	
(a) Steel balls of sizes upto 3/4" diameter	63(28)
(b) Steel balls of sizes of over 3/4" diameter.	72(3)

The relevant extracts of Item Nos. 63(28), 72(3) and 75(10)(v) of the Indian Customs Tariff (35th Issue) are reproduced below:-

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or the manufacture of:			Duration of protective rates of duty.
				The United Kingdom	A British Colony	Burma	
1	2	3	4	5	6	7	8
63(28)	All sorts of Iron and Steel and manufactures thereof not otherwise specified. (a)	Revenue	31¼ per cent. *ad valorem* (a).	-	-	Free	-
72(3)	Component parts of machinery as defined in items Nos. 72, 72(1) and 72(2), namely such parts only as are essential for the working of the machine or apparatus and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose: Provided that articles which do not satisfy this condition shall also be deemed to be component parts of the machine to which they belong if they are essential to its operation and are imported with it in such quantities as may appear to the Collector of Customs to be reasonable. (b) (d)	Revenue	10½ per cent. *ad valorem.* (b) (d).	-	-	Free	-

1	2	3	4	5	6	7	8
75(10)	**The following articles, and parts thereof, adapted for use as parts of accessories of motor vehicles other than motor cycles and motor scooters: (c) (d).**	Preferential (c). Revenue	94½ per cent.	91-$\frac{7}{20}$ per cent. *ad valorem.*	-	-	-
	(i)						
	(ii)						
	(iii)						
	(iv)						
	(v) The following other components: brake hose pipes, ball bearings up to 2" bore, bushings separately imported (excluding oil impregnated bushings) and bumpers.						

(a) Under Government of India, Ministry of Finance (Revenue Division), Notification No. 75-Customs, dated the 17th November, 1951, Short ink ship chains, made of iron or steel, are exempt from the payment of so much of the additional duty of customs leviable thereon under Section 5 of the Finance Act, 1951 as is in excess of one-fifth of the amount of the duty leviable thereon under the Indian Tariff Act, 1934. The resultant duty of custom payable on these articles shall, therefore, be 30 per cent. *ad valorem.* This exemption is granted to implement the Torquay Protocol to the General Agreement on Tariffs and Trade, dated the 21st April, 1951.

(b) Under the Government of India, Ministry of Finance (Revenue Division), Notification No. 45-Customs, dated the 23rd October, 1948, as subsequently amended by the Ministry of Finance (Revenue Division), Notification No. 24-Customs, dated the 8th April, 1950, articles specified in this Item are exempt from payment of the customs duty leviable thefeon to the extent of 5¼ per cent. *ad valorem.*

(c) Under Government of India, Ministry of Finance (Revenue Division), Notification No. 49-Customs, dated the 19th May, 1951, articles adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters, specified in Items 75(10), 75(11) and 75(12) if of the United Kingdom manufacture are exempt from so much of the customs duty leviable under the said items as is indicated in the Schedule below:-

Provided that the said articles are not also adapted for use as parts and accessories of motor cars, including taxi-cabs.

SCHEDULE

Item No.	Existing preferential rate	Reduced preferential rate
75(10)	87 per cent. *ad valorem* plus 5 cent. of the total duty.	82½ per cent. *ad valorem* plus 5 cent. of the total duty.
75(11)	27 per cent. *ad valorem* plus 5 cent. of the total duty.	22½ per cent. *ad valorem* plus 5 cent. of the total duty.
75(12)	27 per cent. *ad valorem* plus 5 cent. of the total duty.	22½ per cent. *ad valorem* plus 5 cent. of the total duty.

(d) These are GATT Items.

Estimate of cost of production and fair ex-works price.

15. In estimating the costs of production and fair ex-works prices of the bearings produced at the Jaipur Factory, we had to face certain difficulties. The main books of accounts of the Company are maintained in Devanagri script while the subsidiary books are maintained in English. The cost of production had, therefore, to be calculated on the basis of the data furnished and the explanations offered by the Company, after making limited test checks, wherever possible, by examining the original documents such as invoices, etc. As the factory started production only from 1st August, 1950, production statistics are not available for a sufficiently long period to be treated as representative. A proper system of costing has not yet been introduced in the factory. Further, certain items of expenditure incurred on the development of axle box bearings which should appropriately have been debited to a separate account have been treated as part of the normal cost of production. Moreover, actual production hours spent in 1951 on each size of bearings were not readily available and, therefore, standard production hours were used as an alternative for calculating total production hours. Apart from these difficulties, there were certain problems to be faced in costing because of the intrinsic character of the production of ball bearings. These problems arose from the large number of types and sizes of bearings produced, the sequence of operations involved in the manufacture of bearings and the need for determining the basis of allocating the overheads to numerous types and sizes of bearings. These points have been mentioned to emphasise that our estimates of costs of production and fair ex-works prices are subject to certain limitations which do not normally obtain in the case of industries costed by us.

We recommend that the Company should take early steps to introduce a proper system of costing. They should record the actual hours taken in each operation. Further, they should exercise stricter control on consumption of stores and take measures to classify the tool room expenditure as between current and capital items.

The costs of production and fair ex-works prices have been determined for 24 sizes of ball bearings for 1951 and estimated for 31 sizes to be manufactured during the eight months ending 31st December, 1952. Of these, 17 sizes forming about 90 per cent. of the total production estimated for 1952, have been selected for the purpose of comparison between the cost of the indigenous bearing and that of the imported bearing. We have given the costs of production and fair ex-works prices for these 17 sizes selected for the purpose of comparison in Appendix VII. The costs of production and fair ex-works prices for steel balls are given in Appendix VIII. Details of the cost estimates prepared for 1952 (May-December) are given in a confidential enclosure to this Report. The various factors which have been taken into account in arriving at these estimates are briefly explained below:-

(i) *Production:* The Company propose to manufacture 31 sizes of different bearings totalling to 417,000 numbers and 4 sizes of steel balls totalling to 640,000 gross during May-December 1952. This works out to a production rate of about 52,000 bearings per month against the corresponding figure of 20,875 bearings per month obtained during April-December, 1951. In the case of steel balls this was 35,568 gross per month during April-December, 1951, while the future programme envisages production at the rate of 80,000 gross per month.

(ii) *Quantities of raw materials:* The Jaipur factory has adopted the same method of production as is followed by Messrs. Hoffmanns, and also uses the same sizes of materials as are employed by them. The standards for the raw material quantities to be used as fixed by Hoffmanns and adopted by the firm have, therefore, been accepted for the purpose of costing. To this has been added a further allowance to cover rejections in manufacture, based on the actual losses incurred in each department during the period April-December, 1951. The total quantity of raw materials required for the manufacture of the various components, *viz.* (a) races, inner and outer, (b) cages, pressed and solid type, (c) steel balls for bearings, (d) rivets and (e) steel wire for steel balls was estimated on the same lines.

(iii) *Prices of raw materials:* The rates adopted for pricing the raw material quantities estimated in (ii) above have been calculated on the basis of the average rate of the stocks on hand on 1st January, 1952 together with those to be purchased and imported. A further allowance has been made on the basis of past experience, to cover the damages that are caused to materials in transit.

(iv) *Power and fuel:* Under this head are included charges for electricity, coal and water. These charges for 1952 have been estimated on the basis of the relation between the total labour hours required to be worked and the corresponding actuals for April-December, 1951.

(v) *Labour:* On the basis of the latest data furnished by the Company in respect of the actual labour hours, the total number of labour hours required for production has been estimated after providing for production efficiency at 50 per cent. These hours multiplied by the actual labour hour rate give the total direct labour cost per unit and for the total production. In arriving at the labour cost, provision has been made for (a) the production bonus to be earned at the rate of 50 per cent. and (b) provident fund contribution to be made at one anna per rupee of the basic wage. The indirect wages have been estimated on the basis of the actual relation between direct and indirect wages during April-December, 1951. The total of direct and indirect wages, so calculated, gives the total direct labour cost and is included in the 'conversion charges'.

(vi) *Consumable stores:* On the basis of the latest actual consumption figures furnished by the Company the consumable stores required for 1952 have been estimated by suitably adjusting the actual consumption to the increased production. An allowance has been made, as estimated by the Company, for the cost of stores to be consumed in the manufacture of tools, etc. The net cost of stores, after making this allowance, has been taken into account.

(vii) *Establishment:* This figure has been computed by taking into account the actual expenditure incurred in 1951 and making provision in respect of the following: (a) General Manager's salary, (b) a Cost Accountant to be employed, (c) increments for the staff, wherever applicable, (d) provident fund contribution, and (e) provision for leave pay for the European staff.

(viii) *Depreciation:* This has been allowed at the income-tax rates on the written down value of the plant and machinery, etc., employed in the manufacture of bearings and steel balls. This works out to Rs. 3,00,000 for May-December, 1952.

(ix) *General overheads:* These comprise items such as insurance, rent, rates and taxes, stationery and printing, etc. With the exception of the managing agents' allowance and fixed royalty payable by the Company, dealt with separately below, all the other charges have been estimated on the basis of the actual expenditure incurred during April-December, 1951.

(a) *Managing agents' allowance:* For 1951, the managing agents waived this allowance as the Company made no profits. For 1952, this is provided at Rs. 18,000 per annum in accordance with the managing agency agreement.

(b) *Fixed royalty:* This is payable to Messrs. Hoffmanns at Rs. 5,575 per month in accordance with the agreement. Provision for this item has, therefore, been made in the estimates for 1952.

(x) *Packing charges:* These have been provided on the basis of the actual expenditure incurred in 1951 after suitable adjustment for the increased production in 1952.

(xi) *Conversion charges:* The total of all the expenses under items (iv) to (x) inclusive above, have been grouped under the heading "conversion charges". These charges have been applied at a rate on the respective direct wages costs calculated for each size of ball bearings and steel balls so as to arrive at the fair ex-works prices ultimately.

A comparison of the ratio of the conversion charges to the direct wages cost in other well established similar industries with that of the Jaipur factory shows that the latter has got a very high rate of conversion charges. Of these charges depreciation alone works out to over 25 per cent. We are of the view that the National Bearing Co. should take note of this high rate and adopt all possible precautionary measures to keep the conversion charges at as low a level as is possible without impairing the quality of the product.

(xii) *Interest on working capital:* In view of the slow rate of turnover obtained in this industry, interest has been allowed at the rate of 4½ per cent. per annum on six months' cost of production (excluding depreciation).

(xiii) *Return on block:* The original value of the block for 1952 amounts to about Rs. 51,00,000. Return has been allowed at 10 per cent. on this amount. Proportionate amount of return chargeable to the production period works out to Rs. 3.4 lakhs.

(xiv) *Variable royalty:* In accordance with the agreement entered into between the Company and Messrs. Hoffmanns, this has to be provided at the rate of 2½ per cent. *net* on the sale value. We consider that, in computing this charge, income-tax payable should also be taken into account, so that Messrs. Hoffmanns will be able to realise the variable royalty at 2½ per cent. *net* This requires a provision at 4 per cent. on the ex-works prices to be calculated.

(xv) *Fair ex-works prices:* Adding the interest on working capital, return on block and the variable royalty to the total cost of raw materials and conversion charges, the fair ex-works prices have been worked out.

C.i.f. prices and landed costs.

16. It is the practice of the Commission to discuss c.i.f. prices and landed costs at the public inquiry with a view to arriving at the agreed c.i.f. price and landed cost ex-duty which should be taken into account by the Commission for the purpose of comparison with the fair ex-works price of the indigenous product. This was not found possible in the case of the ball bearings industry because the representatives of the leading importers present at the public inquiry were reluctant to disclose their individual c.i.f. prices and landed costs. These representatives, however, agreed that without disclosing the names of the importing firms the Commission might, on the basis of the information already furnished by the firms, mention the lowest and the highest c.i.f. prices for the various types and sizes of bearings imported into the country. Since the prices furnished to the Commission by the leading importers related to earlier periods, the Commission felt that the highest and lowest current c.i.f. prices should be ascertained at the public inquiry. It was eventually decided to obtain the information about the current c.i.f. prices, landed costs and selling prices from each of the leading importers after separate discussions with them. It was understood that in the absence of reliable information about the c.i.f. prices of Japanese bearings, the highest and lowest prices which the Commission would work out would be exclusive of Japanese bearings.

A statement of the lowest c.i.f. prices and landed costs ex-duty of the representative types and sizes of bearings is included in Appendix IX.

Comparison of c.i.f. prices and landed costs with the fair ex-works prices.

17. (a) *Bearings:* The statement given in Appendix IX gives a comparison of the c.i.f. prices and landed costs ex-duty, with the fair ex-works prices calculated for 17 selected sizes of bearings. This statement also shows the duty required under each size separately and also for the groups (i) upto 1" bore diameter, and (ii) above 1" bore diameter. The latter group comprises of only three items, while the remaining 14 sizes come under the former group. In the same statement, the total c.i.f. prices, the total landed costs ex-duty and the total fair selling prices have also been shown for the estimated production. The average rates of import duty indicated for bearings upto 1" bore diameter is 142.6 per cent. and for those above 1" bore diameter, 228.0 per cent. The average rate for all the 17 sizes works out to 151.6 per cent.

(b) *Steel balls.* The statement given in Appendix X shows a comparison of the c.i.f. prices and landed costs ex-duty with the fair ex-works prices of steel balls. It is understood that steel balls of 3/16" were not imported for sometime past. Consequently, no c.i.f. price is available for this size. The rates of import duty indicated for each size vary from 4 per cent. in the case of 1/8" balls to about 31 per cent. in the case of the other two sizes. The weighted average duty indicated in the case of all the three sizes works out to about 13 per cent.

Measure and form of protection.

18. (a) We have carefully examined the three issues which arise in regard to the grant of protection or assistance to the industry: firstly, whether the industry has established its eligibility for protection or assistance; secondly, if it is eligible for protection, what would constitute a suitable measure of protection or assistance; and, thirdly, what would be the best form in which such protection should be given. We would consider the case of ball bearings first.

(b) The ball bearings industry has strategic importance in the economy of the country as it supplies a component of high precision and essentiality to a large number of engineering industries. There exists a large and expanding home market for its products. The industry has built up a nucleus of specialised technical personnel. It has taken steps to develop within the country the production of materials required by it. It has already achieved substantial success in manufacturing products of fairly good quality and after allowing for the initial difficulties of a new industry and the high cost associated with the earlier stages of production, there would appear to be a reasonable chance of the industry being able to consolidate its position in future. We are, therefore, of the view that the ball bearings industry should be granted protection and for this purpose, the existing revenue duties on ball bearings should be converted into protective duties.

(c) We are aware that the existing rates of import duties on ball bearings are lower than what would be required to equalise the fair ex-works prices and the ex-duty landed costs on the basis of the comparison given in paragraph 17 above. We consider, however, that the present level of costs in the industry does not furnish sufficient guidance for determining the requisite quantum of protection. We think that the industry should make efforts to re-organise itself and lower its costs before a realistic assessment of the measure of protection required by it could be made. Moreover, the industry obtains a measure of incidental benefit from the restrictions imposed at present on imports of ball bearings. We, therefore, recommend the conversion of the import duties on ball bearings at the existing rates into protective duties at the same rates for a period of two years. We hope that the Company would be able during this period to re-organise itself, introduce a proper system of costing and effect economies in expenditure with a view to lowering cost. If, however, during this period a situation should arise in which the existing import restrictions cannot be continued, the Company may apply for a review of the rates of import duty.

(d) The Company have claimed that since they are producing adapter bearings, protection to be granted to the industry should cover bearings of this type also. The scope of the inquiry as defined by us in paragraph 4 above includes these bearings and they would, therefore, also be included in the scheme of protection recommended by us above. Adapter bearings at present come under Item No.72(3) of the Indian Customs Tariff Schedule and the present rate of duty is 5¼ per cent. *ad valorem*. Ball bearings for use with shaftings of more than 2" diameter and adapter bearings which are specially designed for use exclusively with power driven machinery are included in India's Schedule of Concessions agreed to under the General Agreement on Tariffs and Trade (GATT) and the rate of duty is bound at 10 per cent. *ad valorem*. India's commitments under the GATT, therefore, would permit an increase in duty on adapter bearings upto a limit of 10 per cent. *ad valorem* only. We may point out that these commitments were entered into by the Government of India before the ball bearings industry was established in the country. We are of the view that the scheme of protection recommended by us in sub-paragraph (c) above should include adapter bearings upto 2" bore diameter. We, therefore, recommend that the rate of duty on these bearings should be increased to 10 per cent. *ad valorem* and converted into protective duty. We also suggest that Government should consider seeking release from its commitments under the GATT in accordance with the usual procedure.

(e) We have examined the likely effect of protection recommended by us in the previous sub-paragraphs (a) to (d) on other industries, including cottage and other small-scale industries. The number of ball bearings used by cottage industries and small-scale industries is negligible. Mostly these bearings are used, as stated earlier in paragraph 8, in industries manufacturing electric fans, electric motors, pumps, machine tools, chaff-cutters, sugar centrifugals and textile machinery. The cost of ball bearings forms a small proportion of the total cost of the products of industries in which they are used in this country and, therefore, the incidence of protective import duties on the prices of these products would be small.

(f) We may refer here to the Company's claim that the import of ball bearings of types and sizes which can be manufactured by the Company should be completely banned. We are not in favour of a total ban on imports of those types and sizes of bearings which the Company is manufacturing or can manufacture. Ball bearings are such an essential component of various industries both as original equipment and for replacement that their continuous and uninterrupted supply to the consuming industries should be fully assured. Since the Jaipur factory is the only unit manufacturing these products in India, it would be desirable to provide against risks of breakdown in supply or stoppage of indigenous production by permitting a certain quantity of imports and thus maintaining contacts with foreign sources of supply. Imports to a limited extent would be advisable also as an incentive to the indigenous industry to maintain standards of quality on a competitive basis and to lower costs. While we are not in favour of a total ban on imports of ball bearings of the types and sizes manufactured by the Company, we are of the view that the value limits for quota licences allowed to the importers of ball bearings should be periodically reviewed and revised in the light of the actual quantities of ball bearings imported against those value limits sc that the object of import restrictions is not undermined by changes in the c.i.f. prices.

(g) The comparison of the fair ex-works prices of indigenous steel balls with the c.i.f. prices of steel balls shows that the maximum rate of import duty required to equalise the prices of indigenous and imported steel balls is 31 per cent. The present rate of import duty on steel balls of sizes upto 3/4" diameter is 31¼ per cent. We are of the view that the existing rates of import duty combined with severe import restrictions obtaining at present adequately safeguards the position of the industry. In the event of a situation arising in which these existing import restrictions cannot be continued, the Company may apply for a review of the position.

Modification of the Indian Customs Tariff Schedule.

19. If our recommendations in paragraph 18 above are accepted by Government, the following modifications may be made in the Customs Tariff Schedule after deleting the words 'ball bearings upto 2" bore' in item No.75(10) (v):-

Item No.	Name of article	Nature of duty	Standard rate of duty.	Preferential rate of duty if the article is the produce or the manufacture of			Duration of protective rates of duty
				The United Kingdom	A British Colony	Burma	
72(35)	Ball bearings of all kinds not exceeding 2" bore dia. adapted for use as parts and accessories of motor vehicles other than motor cycles and motor scooters.	Protective.	94% per cent. *ad valorem*	*	--	--	31st Dec., 1954.
72(36)	Ball bearings of all kinds not exceeding 2" bore dia. not otherwise specified.	Protective	94% per cent. *ad valorem.*	--	--	--	31st Dec., 1954.
72(37)	Adapter bearings not exceeding 2" bore dia. which are specially designed for use exclusively with power driven machinery.**	Protective	10 per cent. *ad valorem.*	--	--	Free	31st Dec., 1954.
72(38)	Ball and roller bearings for use with shaftings of more than 2" bore dia. and adapter bearings, not otherwise specified, which are specially designed for use exclusively with power driven machinery.**	Revenue	5% per cent. *ad valorem.*	--	--	--	--

* To be fixed according to the relevant Agreements.
** These are GATT items.

Other assistance.

20. (a) The industry has claimed that the import duties on raw materials required for the manufacture of ball bearings and steel balls should be abolished. The principal raw material used by the industry is high carbon chromium steel which is at present a protected item under item No.63(30) of the Indian Customs Tariff Schedule, the duration of protection extending to 31st December, 1954. It is not, therefore, possible to consider the question of abolishing or reducing the import duty on high carbon chromium steel.

(b) Another form of assistance which the industry has claimed is the abolition of import duty on grinding wheels not manufactured in India. The industry is at present importing ball grinding wheels which are not available from indigenous manufacturers. The duty on such wheels has already been reduced recently by Government and this reduction, in our opinion, should afford sufficient relief to the industry.

Summary of conclusions and recommendations.

21. Our conclusions and recommendations are summarised below:-

(1) The scope of the inquiry should include ball bearings of all types and sizes not exceeding 2" bore diameter and steel balls of all sizes upto 9/16" diameter. [Paragraph 4]

(2) There is no serious risk of ball bearings being substituted by roller bearings and, therefore, the exclusion of roller bearings from the scope of the present inquiry will not affect adversely the position of the ball bearings industry. [Paragraph 4]

(3) The annual demand for ball bearings is estimated at about 900,000 bearings. The annual demand for bearings below 3/8" bore diameter (10 m.m.) is estimated at 25,000/30,000 numbers; for those between 3/8" bore diameter and 1" bore diameter (10 m.m. to 25 m.m.) at 550,000/600,000 numbers; for those between 1" bore diameter and 2" bore

diameter (25 m.m. to 50 m.m.) at 200,000 numbers; and for those above 2" bore diameter (above 50 m.m.) at about 75,000 numbers. [Paragraph 9]

(4) The total demand for steel balls is estimated at about 1,000,000 gross per annum. [Paragraph 9]

(5) The total annual capacity of the Jaipur factory for manufacturing bearings on single shift basis is estimated at about 600,000 bearings. [Paragraph 10(a)(i)]

(6) The total capacity of the two units, *viz.*, the National Bearing Company and the New Haven Steel Ball Corporation for manufacturing steel balls is estimated at about 1,234,000 gross steel balls per annum on single shift basis. [Paragraph 10(a)(ii)]

(7) It would be desirable for the National Bearing Company to establish close contacts with the consumers in India so that the Company might be able to arrange their production according to a well-planned programme. [Paragraph 10(b)]

(8) The National Bearing Company should continue its efforts to maintain high standards of quality for its products. They should also make the necessary arrangements for carrying out accelerated life tests for their bearings and furnish life test certificates when required. [Paragraph 11]

(9) The National Bearing Company should make every effort to expedite deliveries of their bearings and should, for this purpose, maintain adequate stocks at all the principal consuming centres, particularly of those bearings which are included in the restricted categories for purposes of import trade control. [Paragraph 12]

(10) The National Bearing Company should utilise to the maximum extent the dealers and stockists already in the trade in different parts of the country so that the indi-

genous bearings are readily brought to the notice of the consumers and can be quickly supplied against orders. [Paragraph 12]

(11) Steps should be taken by the National Bearing Company at an early date to provide the necessary technical advice to consumers in regard to the use of their ball bearings. [Paragraph 12]

(12) Government should arrange to have the imports of ball bearings recorded separately in the Accounts relating to the Foreign Trade and Navigation of India under the following classification:-

(i) upto 1" bore diameter;
(ii) between 1" and 2" bore diameter; and
(iii) above 2" bore diameter.

The imports of steel balls should also be recorded separately under the following classification:-

(i) steel balls upto 9/16" diameter; and
(ii) steel balls above 9/16" diameter.

[Paragraph 13(a)]

(13) The costs of production and fair ex-works prices of ball bearings as estimated for 17 sizes out of the 31 sizes to be manufactured during the eight months ending 31st December, 1952, are shown in Appendix VII. [Paragraph 15]

(14) The costs of production and fair ex-works prices for steel balls are shown in Appendix VIII. [Paragraph 15]

(15) The National Bearing Company should take early steps to introduce a proper system of costing. They should record the actual hours taken in each operation. Further, they should exercise stricter control on consumption of stores and take measures to classify the tool room expenditure as between current and capital items. [Paragraph 15]

(16) The National Bearing Company should take note of the existing high ratio between the direct wages and other

conversion charges of the bearings and adopt all possible precautionary measures to keep the conversion charges at as low a level as possible without impairing the quality of the bearings. [Paragraph 15(xi)]

(17) The average rates of import duty which would equalise the landed costs ex-duty with the fair ex-works prices of bearings upto 1" bore diameter works out to 142.6 per cent. and for bearings above 1" bore diameter at 228.0 per cent. The average rate of import duty for all the 17 sizes works out at 151.6 per cent. [Paragraph 17(a)]

(18) The rates of import duty which would equalise the landed costs ex-duty with the fair ex-works prices of steel balls work out at 4 per cent. in the case of steel balls of 1/8" size and 31 per cent. in the case of balls of 1/4" and 5/32" sizes. [Paragraph 17(b)]

(19) The ball bearings industry should be granted protection for a period of two years but in view of the present restrictions on imports of ball bearings, the existing revenue duties on ball bearings should be converted into protective duties at the same rates. If a situation arises in which the existing import restrictions cannot be continued, the Company may apply for a review of the rates of import duty. [Paragraph 18(b) and (c)]

(20) The rate of duty on adapter bearings upto 2" bore diameter should be increased to 10 per cent. *ad valorem* and converted into protective duty. [Paragraph 18(d)]

(21) Government should consider seeking release from its commitments under the GATT in regard to the import duty on ball bearings for use with shafting and adapter bearings. [Paragraph 18(d)]

(22) The incidence of the protective import duties recommended for ball bearings on the prices of the products of other industries, including cottage and small-scale industries would be small. [Paragraph 18(e)]

(23) It would not be desirable to impose a total ban on imports of even those types and sizes of bearings which the Company is manufacturing or can manufacture. Imports to a limited extent would be desirable not only to provide against risks of breakdown in supply or stoppage of indigenous production but also as an incentive to the indigenous industry to maintain standards of quality and to lower costs. [Paragraph 18(f)]

(24) The value limits for quota licences allowed to the importers of ball bearings should be periodically reviewed and revised in the light of the actual quantities of ball bearings imported against those value limits. [Paragraph 18(f)]

(25) The existing rates of import duty on steel balls combined with severe import restrictions obtaining at present adequately safeguards the position of the steel balls industry. In the event of a situation arising in which the existing import restrictions cannot be continued, the Company may apply for a review of the position. [Paragraph 18(g)]

(26) As the high carbon chromium steel which is the principal raw material of the ball bearings industry is a protected item, it is not possible to consider the question of abolishing or reducing the import duty levied on it. [Paragraph 20(a)]

(27) The reduction in import duty on grinding wheels recently effected by Government should afford sufficient relief to the industry in the use of this material. [Paragraph 20(b)]

Acknowledgements.

22. We wish to express out thanks to the representatives of the manufacturers, importers and consumers for furnishing us with valuable information and giving evidence before us. Our thanks are due to the National Bearing Company, Ltd., Jaipur and the New Haven

Steel Ball Corporation, Bombay, for their co-operation in carrying out this inquiry. We would also like to express our thanks to Shri P.L. Kumar, Development Officer (Mechanical) of the Development Wing of the Ministry of Commerce and Industry who acted as our Technical Adviser for this inquiry and rendered valuable assistance at all stages of the inquiry. Our thanks are also due to Shri R. Sundaram, Cost Accounts Officer attached to the Commission for his assistance in completing a piece of intricate costing.

G.L. MEHTA,
Chairman

B.V. NARAYANASWAMY,
Member.

B.N. ADARKAR,
Member.

D.K. Malhotra,
Secretary.

Bombay,
28th August, 1952.

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APPENDIX I

(*Vide* paragraph 1)

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY

RESOLUTION
(Tariffs)

New Delhi, the 8th September, 1951.

No. I-T(13)/50.- In pursuance of paragraphs 2 and 7 of their Resolution in the late Department of Commerce No. 218-T(55)/45 dated the 3rd November, 1945, and paragraph 4 of their Resolution bearing the same number, dated the 16th February, 1946, the Government of India have decided to refer to the Tariff Board for investigation an application for protection or assistance received in respect of ball bearings below 2" in diameter and steel balls.

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2. In conducting the inquiry, the Board will be guided by the principles laid down in paragraph 5 of the Resolution dated the 3rd November, 1945 referred to in paragraph 1 above.

3. Firms or persons interested in this industry or in industries dependent on the use of this article, who desire that their views should be considered by the Tariff Board should address their representations to the Secretary to the Board, Contractor Building, Nicol Road, Ballard Estate, Bombay 1.

Sd./- S. BHOOTHALINGAM,
Joint Secretary to the Government of India.

APPENDIX II

(*Vide* paragraph 1)

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY

New Delhi, the 17th November, 1951.

RESOLUTION
(Tariffs)

No. 1-T(13)/50.- In their Resolution in the Ministry of Commerce and Industry No. 1-T(13)/50, dated the 8th September, 1951, the Government of India had *inter alia* referred to the Indian Tariff Board for investigation an application for protection or assistance received in respect of ball bearings below 2" in diameter. The Government of India have now decided that the Tariff Board's investigation should cover all ball bearings irrespective of size.

Sd./- K.N. KAUL,

Joint Secretary to the Government of India.

APPENDIX III

[*Vide* paragraph 3(a)]

List of firms and bodies to whom the Commission's questionnaires were addressed indicating those who replied [illegible] submitted memoranda.

* Indicates those who sent detailed replies or adequate information.

** Indicates those who did not reply in detail

*** Indicates those who are not interested.

I. *PRODUCERS:*

(i) *Manufacturers of Ball Bearings and Steel Balls:*

* National Bearing Co. Ltd.,
Jaipur (Rajasthan State).

(ii) *Manufacturers of Steel Balls only:*

* New Haven Steel Ball Corporation,
Nanjee Building, 17-B, Elphinstone Circle, Fort, Bombay.

II. (i) *IMPORTERS:*

*1. Motiram Agarwal & Co. Ltd.,
137, Canning Street, Calcutta.

** 2. The Ballmann Trading Co.,
91, Netaji Subhas Road, Calcutta.

3. Rewa Shankar Bhanji,
138, Canning Street, Calcutta.

* 4. Bharat Trading Co.,
43, Nagdevi Cross Lane, Bombay-3.

** 5. Binny & Co.,
Armenian Street, G.T. Madras.

** 6. Biyani & Sons Ltd.,
137, Canning Street, Calcutta.

* 7. The Bombay Company Ltd.,
18-A, Brabourne Road, Pollock House, Calcutta-1.

8. S. Bose,
38, Netaji Subhas Road, Calcutta.

** 9. Burma Cycle Trading Co.,
164, Broadway, G.T. Madras-1.

**10. The Central Trading Co.,
137, Canning Street, Calcutta-1.

II.(i) *IMPORTERS (Contd.)*

11. Commercial Engineering Corporation,
25, Strand Road, Calcutta.

**12. Chimanlal Desai & Co.,
54, Bentinck Street, Calcutta.

*13. Dhirajlal & Co.,
62, Princess Street, Bombay-2.

***14. Mohanlal M. Doshi,
P.B. No. 2182, Bombay.

15. East Asiatic Co.,
F-2, Clive Building, Calcutta.

**16. Eastern Importers Syndicate,
91, Netaji Subhas Road, Calcutta.

17. The English Cycle and Motor Company,
15, Bastion Road, Bombay-1.

18. Federal Sports,
10, Esplanade, Delhi.

*19. General Motors India Ltd.,
Post Box No. 39, Bombay-1.

20. Gerilal & Co.,
48, Dhanukar Building, Kalbadevi Road, Bombay.

21. Poptalal Ghelabhai & Co.,
27/29, Popatwadi, Kalbadevi Road, Bombay-2.

22. Poptalal Gilabhai & Co.,
138, Canning Street, Calcutta.

**23. Girdharilal & Co.,
89, Netaji Subhas Road, Calcutta.

**24. Globe Agencies,
137, Canning Street, Calcutta.

**25. Greaves, Cotton and Co. Ltd.,
1, Forbes Street, Fort, Bombay.

26. Greentose Corporation (India) Ltd.,
24, Dalal Street, Fort, Bombay-1.

27. Greentose Corporation (India),
84, Netaji Subhas Road, Calcutta.

*28. Guest, Keen, Williams Ltd.,
41, Chowringhee Road, Calcutta-16.

29. Gupta Trading Co.,
4, Narayan Dhuru Cross Lane, Bombay-3.

30. Harrisons and Crosfield Ltd.,
Cochin.

**31. Hindustan Ball Bearing Corporation,
137, Canning Street. Calcutta-1.

II. (i) *IMPORTERS (Contd.)*

32. Hutheesingh Engineering Co.,
Gheekanta, Ahmedabad.

33. India Trading Corporation,
11, Daryaganj, Delhi-7.

*34. William Jacks & Co. Ltd.,
16, Netaji Subhas Roas, P.O. Box 369, Calcutta-1.

**35. Jagdish Machinery Stores,
39, Netaji Subhas Road, Calcutta.

36. Jawahar Kanta,
Kaiser Bagh Circus, Lucknow.

*37. Jayems Engineering Co.,
Warden House, Sir P.M. Road, Fort, Bombay.

***38. Jhalani Brothers,
Gali Loha Wali, Chawri Bazar, Delhi.

*39. Joshina and Thakker Engineering Stores,
Tulsi Falia, Station Road, Surat.

*40. Kamlashankar P. Joshi & Co.,
72/80, Nagdevi Cross Lane, Bombay-3.

**41. Machine Tools (India) Ltd.,
Stephen House, Dalhousie Square, Calcutta-1.

42. Mansetta & Bros.,
14/2, Old China Bazar Street, Calcutta.

43. Nanubhai Sons & Co.,
16, Old Custom House Road, Bombay.

44. Masrani & Co.,
153, Narayan Dhuru Street, Bombay.

*45. Roberts, McLean & Co. Ltd.,
31, Netaji Subhas Road, Calcutta.

*46. McLeod & Co. Ltd.,
3, Netaji Subhas Road, Post Box 78, Calcutta.

47. R.L. Mehra & Co.,
20, Netaji Subhas Road, Calcutta.

48. Metropolitan Cycle House,
24, Broadway, Madras-1.

49. Mill Store Company,
138, Canning Street, Calcutta.

50. Mill Stores and Belting Co.,
38, Netaji Subhas Road, Calcutta.

51. Modern Distributing Co.,
15, Singanna Chetty Street, Chintadripet, Madras.

52. Dhirajilal Morarji,
2, Portuguese Church Street, Calcutta.

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II.(i) *IMPORTERS (Contd.)*

**53. Mousell & Co. Ltd.,
41-A, Free School Street, Calcutta-16.

*54. National Bearing Co. Ltd.,
1-A, Vansittart Row, Calcutta.

**55. National Machinery Stores,
138, Canning Street, Calcutta.

56. Nehalchand & Sons,
Railway Road, Opposite Railway Station, Amritsar.

57. New Import Agency,
138, Canning Street, Calcutta.

58. New Punjab Traders (India),
138, Canning Street, Calcutta.

59. Northern India Cycle Agency,
480, Kalbadevi Road, Bombay.

60. Oriental Cycle Importing Co.,
12, Broadway, G.T. Madras.

61. Pan Orient Co.,
8, Waterloo Street, Calcutta.

62. Kanji Shivji Parekh,
55, Canning Street, Calcutta.

**63. Parween & Co.,
138, Canning Street, Calcutta.

64. Pioneer Steel Industries Ltd.,
34, Strand Road, Calcutta.

65. Popular Cycle Importing Co.,
8/9, Broadway, G.T. Madras.

66. Prabhat Mill Stores, Co.,
138, Canning Street, Calcutta.

*67. Ransome and Marles Bearing Co. Ltd.,
Newark-on-Trent, England.

68. McNeil & Barry Co.,
Netaji Subhas Road, Calcutta.

*69. S.K.F. Ball Bearing Co. Ltd.,
Mustafa Building, 19, Sir P.M. Road, Fort, Bombay.

*70. P.B. Shah & Co. Ltd.,
34, Netaji Subhas Road, Calcutta.

71. Sarathi Brothers,
39, Narayan Mudali Street, Madras.

72. Kanji Shavji & Co.,
138, Canning Street, Calcutta.

II. (i) *IMPORTERS (Contd.)*

73. Bhagat Singh & Co.,
Chandni Chowk, Delhi.

74. Soni Jain Corporation Ltd.,
38, Netaji Subhas Road, Calcutta.

75. Spence Ltd.,
23, Convent Road, Calcutta-14.

***76. K.T. Steel Industries Ltd.,
Broach Street, Opp. Victoria Docks(Blue Gate), Bombay-9.

77. Steel Equipment and Engineering Co.,
34, Strand Road, Calcutta.

78. Suri Ltd.,
Broach Street, Carnac Bunder, Bombay-9.

79. Taparia & Co.,
137, Canning Street, Calcutta.

*80. Tata Iron & Steel Co. Ltd.,
Jamshedpur.

**81. Textile Machinery Corporation Ltd.,
8, Royal Exchange Place, Calcutta.

*82. Tirathadas Keshoram,
130, Narayan Dhuru Street, Bombay-3.

*83. G.C. Vaswani & Co.,
15, Ravendra Mansion, 194, Dinsha Wacha Road,
Churchgate Reclamation, Bombay-1.

II. (ii) *ASSOCIATIONS (IMPORTERS):*

* 1. Ball Bearing Dealers' Association,
137, Canning Street, Calcutta-1.

* 2. Iron, Steel and Hardware Merchants' Chamber of India,
K.T. Building, Broach Street, Opp. Victoria Docks
(Blue Gate), Bombay-9.

* 3. Madras Cycle Importers' Association,
No. 2/9, Broadway, G.T. Madras.

**4. The Mill Gin Store Merchants Association,
109-111, Nagdevi Street, Bombay-3.

III. *CONSUMERS:*

(i) *Chaff Cutter Manufacturers:*

* 1. Amin Chand and Sons,
Village & P.O. Landra, Phillaur, Jullundur District.

2. Aminchand Bhola Nath,
Tanda Road, Jullundur.

3. Aminchand Pyarelal,
Near Kanya Maha Vidyalaya, Jullundur.

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III. (i) *Chaff Cutter Manufacturers (Contd.)*

*5. Agricultural Industries (Regd.),
Batala (East Punjab).

6. Batala Engineering Co. Ltd.,
Batala.

*7. Deccan Engineering Ltd.,
Madhavnagar (M. & S.M. Rly.).

8. Kanpur Iron Brass Works & Flour Mills Ltd.,
Deputy Kapara, Kanpur.

9. Nagina Foundry and Works,
Railway Road, Batala.

*10. New Zemindar Foundry (Regd.),
G.T. Road, Batala.

11. Peapul Iron & Steel Industries,
34-35, Factory Area, Fazalgunj, Kanpur.

12. Singh Engineering Works Ltd.,
G.T. Road, Kanpur.

13. Warkins Mayore and Co.,
Empress Garden Road, Jullundur.

(ii) *Chemical Equipment and Machinery Manufactyrers:*

**14. Corporated Engineers (India) Ltd.,
7, Chittaranjan Avenue, Calcutta.

15. Kusum Engineering Co. Ltd.,
25, Swallow Lane, Calcutta.

**16. Lilluah Iron Works,
41, Chowringhee Road, Calcutta-16.

17. Steel Construction Co. Ltd.,
Avenue Road, Bangalore.

(iii) *Cranes:*

18. Jessop & Co. Ltd.,
Netaji Subhas Road, Calcutta.

(iv) *Cycle Manufacturers:*

*19. Atlas Cycle Industries Ltd.,
Sonepat (Punjab).

*20. Hind Cycles Ltd.,
250, Worli, Bombay-18.

21. Hindustan Cycle & Industrial Corporation Ltd.,
Phulwari Shareef, Patna.

III. (iv) *Cycle Manufacturers (Contd.)*

***22. Sen-Raleigh Industries of India Ltd.,
Mercantile Building, Lall Bazar, Calcutta.

*23. T.I. Cycles (India) Ltd.,
'Swastik House', 106, Armenian Street, G.T. Madras.

(v) *Cycle Accessories Manufacturers:*

24. Indo-Belga Engineering Co. Ltd.,
Gomtipur, Ahmedabad-10.

(vi) *Diesel Engine Manufacturers:*

*25. Cooper Engineering Ltd.,
Satara Road, Satara District, Bombay State.

26. Jayems Beachy & Co. Ltd.,
Warden House, Sir P.M. Road, Fort, Bombay.

27. Faridabad Development Board,
Faridabad.

28. Indian Commercial Co. Ltd.,
45/47, Apollo Street, Bombay.

**29. Khushalani Russel New Berry & Co. Ltd.,
Warden House, Sir P.M. Road, Fort, Bombay-1.

**30. Kirloskar Oil Engines Ltd.,
Elphinstone Road, Kirkee, Poona-2.

*31. Kulko Engineering Works Ltd.,
Ichalkaranji, Kolhapur District, Bombay State.

32. Nand Lal Bhandari & Sons,
Indore City, Madhya Bharat.

33. Oriental Engineering Works Ltd.,
G.T. Road, P.O. Delhi, Shahdara.

34. Shree Ram Mills Ltd.,
Ferguson Road, Parel, Bombay-12.

(vii) *Electric Fan Manufacturers:*

*35. Acme Manufacturing Co. Ltd.,
Antop Hill, Wadala, Bombay-19.

36. Asia Electric Works,
Amritsar.

37. Bengal Electric Lamp Works Ltd.,
7, Hastings Street, Calcutta.

*38. Bharat Electrical Industries Ltd.,
6-A, S.N. Banerjee Road, Calcutta.

*39. Calcutta Electrical Manufacturing Co. Ltd.,
33, Netaji Subhas Road, Calcutta.

III.(vii) *Electric Fan Manufacturers (Contd.)*

40. Calcutta Fan Works Ltd.,
7, Hindustan Park, Calcutta.

41. Central India Electric Works Ltd.,
Karolbagh, Delhi.

42. Chandra Electric and Engineering Co. Ltd.,
Hampankata, Mangalore.

43. Clyde Fan Co. Ltd.,
21/2, Chowringhee Road, Calcutta.

**44. Crompton Parkinson (Works) Ltd.,
Haines Road, Worli, Bombay-18.

45. Ditz Electricals (India) Ltd.,
Rupnagar, Subzi Mandi, Delhi.

46. Engineering Works of India Ltd.,
135, Canning Street, Calcutta.

*47. The Central Electric Co. of India (Manufacturing) Ltd.,
58, Taratalla Road, Garden Reach, Calcutta-24.

48. General Engineering & Electrical Works,
Loni Road, Delhi, Shahdara.

49. Hindustan Electric Works,
Ajmeri Gate, Delhi.

***50. Himalaya Engineering Co. (Regd.),
G.T. Road, Miller Ganj, Ludhiana, East Punjab.

*51. India Paramount Industries,
G.T. Road, Amritsar.

*52. India Electric Works Ltd.,
Diamond Harbour Road, Calcutta-8.

53. Indian Reconstruction Corporation Ltd.,
21-A, Gaurlaha Street, Calcutta.

54. Imperial Electric Company,
Amritsar.

*55. Jaura Engineering Works,
Azad Nagar, Amritsar.

*56. Jay Engineering Works Ltd.,
183-A, Prince Anwar Shah Road, Dhakuria, Calcutta-31.

57. Jay Pee Industries,
Chowk Babasahib, Amritsar.

58. Kassels Ltd.,
Subzi Mandi, Delhi.

59. Kaycee Industries Ltd.,
Kamani Chambers, Ballard Estate, Bombay.

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III. (vii) *Electric Fan Manufacturers (Contd.)*

*60. Luxmi Engineering Works,
Hide Market, G.T. Road, Amritsar.

*61. Matchwal Electricals (India) Ltd.
Subzi Mandi, Delhi,

62. Metropole Works Ltd.,
Verka, Amritsar.

63. Monga Electric Industries,
Amritsar.

*64. Murray & Co.,
Block No. 9, Swadeshi Mills Estate, New Queen's Road,
Bombay.

*65. National Electrical Manufacturing Co.,
Near Railway Station, Patiala.

66. Omega Fan Manufacturing Co. Ltd.,
28, Strand Road, Calcutta.

*67. Polar Electrical Engineering Company,
Room 93, 14/2, Old China Bazar Street, Calcutta.

68. Punjab Machinery Works,
Ludhiana.

*69. Raj Electrical Works Ltd.,
5, Daryaganj, Delhi.

70. Sewak Fan House,
Amritsar.

71. B.M. Singh & Sons,
1, Crooked Lane, Post Box No. [illegible], Calcutta-1.

72. Standard Engineering Works,
5, Glamour Building, Colaba, Bombay-1.

(viii) *Electric Goods Manufacturers*

73. Hindustan General Electric Corporation Ltd.,
5, Royal Exchange Place, Calcutta.

***74. Indian Cable Co. Ltd.,
9, Hare Street, Calcutta.

***75. Indian Conduit Pipes Ltd.,
Stephen House, 4, Dalhousie Square, Calcutta.

76. Kay Engineering Works,
Kapurthala.

77. National Insulated Cable Co. of India Ltd.,
Stephen House, 4, Dalhousie Square, Calcutta.

***78. Radio Lamp Works Ltd.,
Kamani Chambers, Nicol Road, Ballard Estate, Bombay.

III.(viii) *Electric Goods Manufacturers (Contd.)*

79. Sankey Electrical Stampings Ltd.,
Bhandup (Central Railway), Bombay.

***80. Standard Batteries Ltd.,
43, Forbes Street, Fort, Bombay.

(ix) *Electric Motor Manufacturers:*

*81. Alcock, Ashdown & Co.,
Defence Works, Mazagaon, Bombay.

*82. Angus Engineering Works,
P.O. Angus, Hooghly District, West Bengal State.

*83. Argus Engineering Co. Ltd.,
Peelamedu Post, Coimbatore, S. India.

*84. Associated Electrical Industries Manufacturing Co. Ltd.,
Crown House, 6, Mission Row, Calcutta-1.

*85. Bharat Bijlee Ltd.,
Udyog Nagar, Bombay 22.

*86. British India Electric Construction Co. Ltd.,
21, Netaji Subhas Road, Calcutta.

*87. Eastern Electrical Co. Ltd.,
Singanallur P.O., Coimbatore, S. India.

*88. Electric Construction and Equipment Co. Ltd.,
55, Chittaranjan Avenue, Calcutta.

*89. "GB" Works Ltd.,
Mahesh, Rishra P.O., Hooghly, West Bengal State.

90. G.T.R. and Company Ltd.,
Calcutta.

91. Machine and Industries (India) Ltd.,
Burashibtala, Chinsurah, West Bengal State.

*92. Kirloskar Electric Co. Ltd.,
460/2, 18th Cross Road, Malleswaram, Bangalore-3.

*93. National Electrical Industries Ltd.,
The Industrial Estate, Lalbaug, Bombay.

94. Motor & Machineries Manufacturers Ltd.,
P. 11, Mission Row Extension, Calcutta.

(x) *Engineering Industry:*

***95. K.T. Steel Industries Ltd.,
Broach Street, Opp. Victoria Dock (Blue Gate),
Bombay 9.

(xi) *Gramophone Manufacturers:*

96. The Gramophone Co. Ltd.,
33, Jessore Road, Dum Dum, Calcutta.

97. National Record Manufacturing Co. Ltd.,
110, Meadows Street, Fort, Bombay.

(xii) *Hosiery Machine Manufacturers:*

**98. Kalsi Engineering Works (Regd.),
Ludhiana.

99. Punjab Machinery Works Ltd.,
Millerganj, Ludhiana.

100. Raj Mechanical Industries,
Madhopuri, Ludhiana.

(xiii) *Jute Mill Machinery Manufacturers:*

101. Chatterjee & Co.,
Canning Street, Calcutta.

(xiv) *Machine Tool Manufacturers:*

102. Atlas Works Ltd.,
119, Ripon Street, Calcutta-16.

103. Hindustan Tool Manufacturing Co. Ltd.,
1688, Daryaganj, Delhi.

*104. India Machinery Co. Ltd.,
Dasnagar, Howrah, West Bengal.

**105. Investa Machine Tools & Engineering Co. Ltd.,
Clerk Road, Pais Street, Bombay-11.

106. Mysore Kirloskar Ltd.,
Harihar, Mysore State.

*107. Praga Tools Corporation Ltd.,
Saifabad, Hyderabad (Dn.).

(xv) *Oil Mill Machinery Manufacturers:*

108. Bhartiya Engineering Works,
Sahibganj, Bihar.

109. Medico Surgical Industries,
Hassan Chambers, Parsee Bazar Street, Fort, Bombay.

*110. Masseys',
Railway Terminus Road, Post Box No. 60, Royapuram, Madra

111. Matrumal Dhannalal,
P.O. Hatras, U.P.

112. Practical Engineering Co.,
Bombay.

III. (xv) *Oil Mill Machinery Manufacturers (Contd.)*

113. Punjab Oil Expeller Co.,
2nd Mile Meerut Road, Ghasiabad.

*114. S.P. Engineering Corporation,
79/7, Larouche Road, Kanpur.

(xvi) *Pump Manufacturers:*

115. Bengal Iron Works Ltd.,
18/2, Chatterjee Para Lane, Howrah, Calcutta.

*116. Central Province Industries Ltd.,
Kandwa, Madhya Pradesh.

117. Diamond Machinery Works,
C/o Andhra Industrial Syndicate Ltd., Vijayawada.

118. Forge and Blower & Co.,
Naroda Road, Ahmedabad.

**119. Gresham & Craven of India Ltd.,
22, Gobra Road, Entally, Calcutta 14.

*120. Hindustan Foundry Ltd.,
Udyog Nagar, Bombay 22.

*121. Jyoti Ltd.,
Post Chemical Industries, Baroda 3.

*122. Kirloskar Brothers Ltd.,
Kirloskarvadi, South Satara District, S. India.

*123. Kumar Industries,
P.O. Edathara, Para Rly. Station (Southern Rly.),
S. Malabar, S. India.

124. Maya Engineering Works,
36 - A, Russa Road, Calcutta.

125. Modern Engineering and Moulding Co.,
Shahpur Mills Compound, Ahmedabad 1.

*126. The Mysore Machinery Manufacturers Ltd.,
5th Mile, Mysore Road, Bangalore 2.

*127. Omkar Iron and Brass Factory,
Char Rasta, Dariapur, Ahmedabad.

*128. P.S.G. & Son's Charity Industrial Institute,
Peelamedu P.O., Coimbatore, S. India.

*129. Packo Engineering Ltd.,
Luxmipuri, Kolhapur.

130. Panchal Engineering Ltd.,
Dariapur, Char Rasta, Ahmedabad.

131. Shree Ram Mills Ltd.,
Ferguson Road, Parel, Bombay.

III. (xvi) *Pump Manufacturers (Contd.)*

*132. Ruston and Hornsby (India) Ltd.,
1, Forbes Street, Post Box No. 91, Fort, Bombay.

*133. Vijaya Foundry,
Pappanaickenpalayam, Coimbatore, S. India.

(xvii) *Rice, Dal and Flour Mill Machinery Manufacturers:*

**134. Bery Brothers,
135, Canning Street, Calcutta-1.

135. Binjraj Gangabishan,
Bankers and Rice Millowners, 46, Strand Rd., Calcutta 7.

*136. G.G. Dandekar Machine Works Ltd.,
Bhiwandi, Thana District,
Bombay State (*Via* Kalyan, Central Railway).

137. Ghodka Brothers,
Hubli, Thana District, Bombay State.

138. Leipzig Chemical and Engineering Works Ltd.,
38, Netaji Subhas Road, Calcutta.

(xviii) *Sewing Machines Manufacturers:*

139. Delhi Sewing Machine Co. Ltd.,
M.J. Building, Chandni Chowk, Delhi.

140. Khalsa Cycle Works,
Nawashahar, Jullundur.

*141. K.C. Mullick & Sons Ltd.,
77/13, Dhuramtalla Street, Calcutta-13.

142. R.L. Seth & Co.,
Charkawalan, Chawri Bazar, Delhi.

(xix) *Shipbuilding and Ship Repairs Industry:*

*143. Bombay Steam Navigation Co. Ltd.,
Dockyard Road, Mazagon, Bombay.

144. Binny's Engineering Works Ltd.,
Springhaven Road, Madras Harbour, Madras.

145. Brunton & Co., Engineers Ltd.,
Ballard Road, Cochin.

146. Calcutta Landing and Shipping Co.,
20, Howrah Road, Salkia, Howrah.

**147. A.I. Dixon & Co. Ltd.,
Love Lane, Cross Lane, Byculla, Bombay.

148. East Bengal Engineering Works,
2, Rustomjee Parsee Road, Cossipore, Calcutta.

III.(xix) *Shipbuilding and Ship Repairs Industry (Contd.)*

**149. Ganges Engineering Works,
Bally, Howrah.

150. Garden Reach Workshop Ltd.,
Fairlie Place, Calcutta.

*151. Hooghly Docking and Engineering Co. Ltd.,
6, Howrah Road, Howrah, West Bengal State.

152. India General Navigation and Railway Co.,
4, Fairlie Place, Calcutta.

153. Mazagon Dock Ltd.,
Mazagon, Bombay 10.

***154. Modern Mechanical and Marine Works,
93, Chinch Bunder Road, Bombay.

**155. Port Engineering Works Ltd.,
8, Clive Row, Calcutta 1.

156. Rodda Craft Ltd.,
62/1/2, Jogendra Mukherjee Road, Howrah.

157. Scindia Steam Navigation Co. Ltd.,
Scindia Shipyard, P.O. Gandhigram, Vizagapatam.

158. Sen Mukherjee & Co. (Shipbuilders),
25, Foreshore Road (Lower), P.O. Shalimar.

159. Shalimar Works Ltd.,
1, Foreshore Road, Sibasur, Howrah.

**160. Shaparia Dock and Steel Co. Ltd.,
Sewree Fort Road, Sewree, Bombay.

(xx) *Steel Furniture Manufacturers:*

*161. Godrej and Boyce Manufacturing Co. Ltd.,
Lalbaug, Parel, Bombay-12.

(xxi) *Steel Industry:*

*162. Tata Iron and Steel Co. Ltd.,
Bombay House, Bruce Street, Fort, Bombay.

(xxii) *Sugar Mill Machinery Manufacturers:*

163. Hanuman Engineering Works Ltd.,
178, Harrison Road, Calcutta.

*164. Kumardhubi Engineering Works Ltd.,
Kumardhubi, West Bengal State.

(xxiii) *Tea Processing Machinery Manufacturers:*

*165. Britannia Engineering Co. Ltd.,
Tittaghur, 24-Parganas, West Bengal State.

(xxiv) *Textile Industry:*

166. Calico Industrial Engineer,
Sone Baug, Chakala, Andheri, Bombay.

**167. R.M. Engineering Works,
Khokhra Mahemdabad, P.O. Bag No.190, Ahmedabad.

*168. India Machinery Co. Ltd.,
Makardah Road, Dasnagar, Howrah.

169. Killick Nixon & Co. Ltd.,
Killick Building, Home Street, Fort, Bombay.

170. Lakshmiratan Engineering Works Ltd.,
Empire Buildings, Hornby Road, Bombay.

*171. Machinery Manufacturers' Corporation Ltd.,
Hall & Anderson Building, Park Street, Calcutta 16.

172. National Machinery Manufacturers Ltd.,
United India Life Assurance Building, Sir P.M. Road,
Bombay.

*173. Paragon Engineering Co.,
Globe Mill Passage, Opp. Century Mills, Bombay 13.

*174. Ravi Industries Ltd.,
Janmabhoomi Chambers, Fort, Bombay.

***175. Texmaco (Gwalior) Ltd.,
Gwalior.

176. Textile Machinery Corporation,
Belgurriah, West Bengal State.

*177. Textool Co. Ltd.,
Post Box No. 221, Coimbatore.

178. Vasant Engineering Ltd.,
Goya Gatt, Baroda.

*179. Vasant Industrial & Engineering Works,
'Vasant Vijay', 470-71, Worli Road, Bombay 18.

(xxv) *Transformer Manufacturers:*

180. Advance Industries,
1, Burrows Lane, Girgaum Road, Bombay 2.

181. Automatic Electric Devices Co.,
6, Shivlal Motilal Mansion, Bellasis Road, Bombay 8.

182. Electro Mechanical Engineering Works,
Amarwadi, Khattargalli, Bombay 4.

183. Electro Voice Ltd.,
12, Ashutosh Mukherjee Road, Calcutta.

**184. Government Electric Factory,
Mysore Road, Bangalore City, S. India.

III. (xxv) *Transformer Manufacturers (Contd.)*

185. Mysore Electrical Industries,
Post Box No. 61, Bangalore 2.

186. Phillips Electrical Co. (India) Ltd.,
Phillips House, Reysham Road, Calcutta.

187. Supreme Electrical Engineering Co. Ltd.,
Lady Jamshedji Road, Mahim, Bombay.

(xxvi) *Transport Industry:*

(a) *Automobile Industry:*

*188. Addison and Co. Ltd.,
158, Mount Road, Madras 2.

*189. Ashok Motors Ltd.,
13, Haddows Road, Madras 6.

*190. Automobile Products of India Ltd.,
Bhandup, Bombay State.

*191. Dewar's Garage and Engineering Works,
4, Council House Street, Calcutta 1.

*192. Ford Motor Company of India Ltd.,
P.O. Box No. 499, Bombay.

**193. French Motor Car Co. Ltd.,
9/11, Hughes Road, Bombay 26.

*194. Hindustan Motors Ltd.,
8, Royal Exchange Place, Calcutta.

195. Mahindra & Mahindra Ltd.,
Gateway Building, Apollo Bunder, Bombay.

*196. The Peninsular Motor Corporation Ltd.,
19, Convent Road, Entally, Calcutta 14.

*197. The Premier Automobiles Ltd.,
Construction House, Ballard Estate, Bombay.

*198. Sanghani Momot Industries,
Agra Road, Bhandup. Bombay State.

*199. Simpson & Co. Ltd.,
202/203, Mount Road, Madras.

*200. Standard Motor Products of India Ltd.,
29, Mount Road, Madras.

**201. Triangular Motors Ltd.,
New Queen's Road, Bombay.

202. Transport Vehicles (Daimler) Ltd.,
31, Murzban Road, Fort, Bombay.

III. (xxvi) *Transport Industry (Contd.)*

(b) *Automobile Services:*

*203. Chief Mechanical Engineer,
State Transport Central Office, Government of Bombay,
80/81, Annie Besant Road, Worli, Bombay.

204. Provincial Transport Controller,
Government of Punjab, Gorton Castle, Simla.

205. Inspector General of Police,
Trivandrum, Travancore-Cochin State, South India.

206. Transport Commissioner,
Transport House, Mount Road, Madras.

*207. Shri N. Balakrishnan,
Bus Superintendent, B.E.S.T. Workshop, Kingsway,
Dadar, Bombay 14.

208. Transport Commissioner,
Uttar Pradesh, Lucknow.

(c) *Aviation Industry:*

*209. Air India Ltd.,
New India Assurance Building, Mahatma Gandhi Road,
Bombay.

210. Hindustan Aircraft Ltd.,
Hindustan Aircraft P.O., Bangalore.

(d) *Railways:*

**211. The Secretary,
Railway Board, New Delhi.

*212. Controller of Stores,
Assam Railway, 3, Koilaghat Street, Calcutta.

*213. Controller of Stores,
B.N. Railway, Calcutta.

*214. Controller of Stores,
Bikaner State Railway, Bikaner.

*215. Controller of Stores,
Central Railway, Parel, Bombay.

*216. Controller of Stores,
E.I. Railway, Calcutta.

*217. Controller of Stores,
Northern Railway, The Mall, Delhi.

*218. Controller of Stores,
Southern Railway, Perambur, Madras.

*219. Controller of Stores,
Western Railway, Mahalaxmi, Bombay.

*220. Chittanranjan Locomotive Works,
Chittaranjan, West Bengal State.

III. (xxvi) *Transport Industry (Contd.)*

(e) *Shipping Industry:*

*221. Scindia Steam Navigation Co. Ltd.,
Scindia House, Ballard Estate, Bombay.

(f) *Others:*

*222. Bombay Port Trust,
Ballard Road, Ballard Estate, Bombay.

223. Prime Movers India Ltd.,
Devkaran Nanjee Building, Elphinstone Circle,
Fort, Bombay.

*224. Lever Brothers Ltd.,
Scindia House, Ballard Estate, Fort, Bombay.

(xxvii) *Associations (Consumers):*

225. The Secretary,
Fan Makers' Association,
C/o M/s. Metropole Works, Verka, Amritsar.

*226. The Secretary,
Fan Makers' Association of India,
35, Stephen House, 4, Dalhousie Square, East,
Calcutta 1.

*227. The Secretary,
Indian Electrical Manufacturers Association,
35, Stephen House, Room No. 35, Dalhousie Square,
Calcutta 1.

*228. Society of Motor Manufacturers and Traders Ltd.,
Post Box 173, New Delhi.

IV. *ASSOCIATIONS (Industrial and Engineering):*

1. The Secretary,
All India Manufacturers' Organisation,
Industrial Assurance Building, Churchgate, Fort,
Bombay.

*2. The Secretary,
Engineering Association of India,
23-B, Netaji Subhas Road, Calcutta-1.

3. The Secretary,
Indian Engineering Association,
Royal Exchange, Calcutta-1.

V. *CENTRAL GOVERNMENT DEPARTMENTS AND OTHER INSTITUTIONS:*

*1. Director-General of Commercial Intelligence and
Statistics,
1, Council House Street, Calcutta.

*2. Director-General of Ordnance Factories,
6, Esplanade East, Calcutta.

V. *CENTRAL GOVERNMENT DEPARTMENTS AND OTHER INSTITUTIONS (Contd.)*

*3. Director-General of Supply and Disposals,
Shahjehan Road, New Delhi.

*4. Indian Standards Institution,
19, University Road, Civil Lines, Delhi -8.

VI. *RAW MATERIAL MANUFACTURERS:*

*1. Bhartia Electric Steel Co. Ltd.,
42, Shibtolla Street, Calcutta.

*2. Metal and Steel Factory,
Ishapore, Calcutta.

*3. Mukand Iron and Steel Works Ltd.,
51, Mahatma Gandhi Road, Fort, Bombay.

*4. The National Iron and Steel Co. Ltd.,
Stephen House, 4, Dalhousie Square, Calcu

*5. Tata Iron and Steel Co. Ltd.,
Bombay House, Bruce Street, Fort, Bombay.

6. Texmaco,
24-Parganas, Calcutta, West Bengal.

VII. *COLLECTORS OF CUSTOMS AND EXCISE:*

*1. Collector of Customs,
Bombay.

*2. Collector of Customs,
Calcutta.

**3. Collector of Customs,
Cochin.

*4. Collector of Customs,
Madras.

*5. Collector of Central Excise,
Bombay.

*6. Collector of Central Excise and Land Customs,
Calcutta.

*7. Collector of Central Excise,
Delhi.

*8. Collector of Central Excise,
Jamnagar.

9. Deputy Collector of Central Excise and Land Customs,
Ajmer.

*10. Deputy Collector of Central Excise,
Baroda.

**11. Deputy Collector of Central Excise Land Customs,
Shillong.

**12. Assistant Collector of Central Exci
Puri.

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VIII. *STATE GOVERNMENTS/DEPARTMENTS:*

**1. Chief Secretary to the Government of Assam,
Shillong.

**2. Chief Secretary to the Government of Bhopal,
Bhopal.

**3. Chief Secretary to the Government of Bihar,
Patna.

*4. Chief Secretary to the Government of Bombay,
Fort, Bombay.

*5. Chief Secretary to the Government of East Punjab,
Simla.

**6. Chief Secretary to the Government of Himachal Pradesh,
Simla.

7. Chief Secretary to the Government of Hyderabad (Dn.),
Hyderabad (Dn.).

*8. Chief Secretary to the Government of Madras,
Fort St. George, Madras.

*9. Chief Secretary to the Government of Madhya Bharat,
Gwalior.

*10. Chief Secretary to the Government of Madhya Pradesh,
Nagpur.

**11. Chief Secretary to the Government of Mysore,
Bangalore.

**12. Chief Secretary to the Government of Orissa,
Cuttack.

**13. Chief Secretary to the Government of Punjab and East
Punjab Union, Patiala.

14. Chief Secretary to the Government of Rajasthan,
Jaipur.

**15. Chief Secretary to the Government of Saurashtra,
Rajkot.

16. Chief Secretary to the Government of Travancore-Cochin,
Trivandrum.

*17. Chief Secretary to the Government of Uttar Pradesh,
Lucknow.

**18. Chief Secretary to the Government of Vindhya Pradesh,
Rewa.

*19. Chief Secretary to the Government of West Bengal,
Calcutta.

*20. Chief Commissioner of Ajmer,
Ajmer.

VIII. *STATE GOVERNMENTS/DEPARTMENTS (Contd.)*

**21. Chief Commissioner of Coorg,
Mercara.

**22. Chief Commissioner of Delhi,
Delhi.

**23. Embassy of India in Japan, (Trade Section),
Empire House (Naigai Building), Marunouchi, Tokyo.

IX. *CHAMBERS OF COMMERCE:*

*** 1. Associated Chambers of Commerce of India,
2, Royal Exchange, Calcutta.

2. The Association of British Chemical Manufacturers,
Janmabhoomi Chambers, Fort Street, Bombay.

* 3. Bengal Chamber of Commerce,
Royal Exchange Building, 2, Netaji Subhas Road,
Calcutta.

4. Bengal National Chamber of Commerce,
P-11, Mission Row Extension, First and Second Floor,
Calcutta.

** 5. Bharat Chamber of Commerce,
Imperial Bank Building (Burra Bazar Branch),
195, Harrison Road, Calcutta-7.

6. Bihar Chamber of Commerce,
Patna.

*** 7. Bombay Chamber of Commerce,
Mackinnon Mackenzie's Building, Ballard Estate, Bombay.

8. C.P. & Berar Chamber of Commerce,
Surza Villas, Temple Road, Civil Station, Nagpur.

9. Eastern Chamber of Commerce,
15, Clive Row, Calcutta.

10. Federation of Indian Chamber of Commerce & Industry,
28, Ferozeshah Road, New Delhi.

11. Hindustan Chamber of Commerce,
14/2, Clive Row, Calcutta.

12. Indian Chamber of Commerce,
23-B, Netaji Subhas Road, Calcutta.

13. Indian Chamber of Commerce,
Desi Beopar Mandal, Ambala Cantt.

14. Indian Merchants' Chamber,
Near Churchgate Station, 1, Churchgate Reclamation,
Bombay.

*15. The Jaipur Chamber of Commerce,
Johri Bazar, Jaipur City.

IX. *CHAMBERS OF COMMERCE (Contd.)*

16. Karnatak Chamber of Commerce,
Hubli.

***17. Madras Chamber of Commerce,
Dare House, First Line Beach, Madras.

18. Maharashtra Chamber of Commerce,
Industrial and Prudential Building,
Near Churchgate Station, Bombay.

19. Mahratta Chamber of Commerce & Industries,
587/9, Shukrawar Peth, Tilak Road, Poona 2.

20. Mysore Chamber of Commerce,
Bangalore.

21. Nagpur Chamber of Commerce Ltd.,
Near Cotton Market, Nagpur.

22. Orissa Chamber of Commerce,
P.O. Chandinichauk, Cuttack.

23. Punjab Chamber of Commerce,
Scindia House, New Delhi.

24. Saurashtra Chamber of Commerce,
Mahatma Gandhi Road, Lokhand Bazar, Bhavanagar.

25. Southern India Chamber of Commerce,
Indian Chamber Building, North Beach, Madras.

26. United Provinces Chamber of Commerce,
15/134, Civil Lines, Kanpur.

***27. Upper India Chamber of Commerce,
Civil Lines, Kanpur.

28. Western India Chamber of Commerce,
232-234, Kalbadevi Road, Bombay.

X. *TRADE ASSOCIATIONS:*

** 1. All-India Importers' Association,
Churchgate House, Churchgate Street, Bombay.

2. All-India Manufacturers' Organisation,
Industrial Assurance Building,
Opp. Churchgate Station, Fort, Bombay.

3. Association of Indian Industries,
Industrial Assurance Building,
Opp. Churchgate Station, Bombay.

4. Bombay Share Holders' Association,
Agakhan Building, Dalal Street, Fort, Bombay.

5. Indian Chemical Manufacturers' Association,
102-A, Netaji Subhas Road, Calcutta.

X. *TRADE ASSOCIATIONS (Contd.)*

6. Indigenous Manufacturers' Association,
   Temple Chambers, 6, Old Post Office Street, Calcutta.
7. Madras Trades Association,
   Mount Road, Madras.

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APPENDIX IV

[*Vide* paragraph 3(d)]

List of persons who attended the Commission's public inquiry on 5th, 6th and 7th May, 1952.

PRODUCERS:

1.	Shri A. Goenka	)	Representing	National Bearing Co. Ltd., Jaipur, (Rajasthan State).
2.	Shri R.D. Periwal	)		
3.	Mr. G.W. Golding	)		
4.	Shri S.G. Choudhary	)		
5.	" P.R. Dubey	)		
6.	" S.R. Bhise	)		
7.	" P.S. Bhatnagar	)		
8.	" B.M. Sharda	)		
9.	" R. Subramanian	)		
10.	" B. Maheswar	)		
11.	Shri D.M. Mehta		Representing	New Haven Steel Ball Corporation, Nanjee Building, 2nd Floor, 17-B, Elphinstone Circle, Fort, Bombay.

IMPORTERS:

1.	Mr. J.H. Higham	)	"	S.K.F. Ball Bearing Co. Ltd., Mustafa Building, 19, Sir Phirozshah Mehta Road, Bombay 1.
2.	" S. Virding	)		
3.	" I. Soderstrom	)		
4.	" T.E. Steel B.L.C.A.		"	Ransome and Marles Bearing Co. Ltd.,, Newark-on-Trent, England.
5.	" A.R. MacGillivray O.B.E.	)	"	Roberts, McLean & Co. Ltd., 31, Netaji Subhas Road, Calcutta.
6.	" R.C. Atterton	)		
7.	" N. Gaskell		"	Guest, Keen, Williams Ltd., 41, Chowringhee Road, Calcutta 16.
8.	" D.R.T. Wickham		"	The Bombay Co. Ltd., 18-A, Brabourne Road, Pollock House, Calcutta 1.

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IMPORTERS: (Contd.)

9.	Mr. R. Hyam)	Representing	General Motors India Ltd., Post Box No.39, Bombay.
10.	" M.G. Foley)		
11.	" P.G.A. Ratliff)		
12.	" D.G.A. Rose)	"	William Jacks Co. Ltd., 16, Netaji Subhas Road, P.O. Box 369, Calcutta 1.
13.	Shri C.S.R. Sarma)		
14.	" Dhirajlal S. Gandhi	"	Dhirajlal & Co., 62, Princess Street, Bombay.
15.	" C.G. Shah)	"	Bharat Trading Co., 43, Nagdevi Cross Lane, Bombay 3.
16.	" K. Mehta)		
17.	" M.K. Joshi)	"	Kamlashankar P. Joshi & Co., 72-80, Nagdevi Cross Lane, Bombay.
18.	" K.P. Joshi)		
19.	" B.M. Mehta	"	Anil Bearing Stores, 163, Nagdevi Cross Lane, Bombay 3.
20.	" R.D. Shah	"	Regal Trading Co., 815, Char Rasta, Gandhi Road, Ahmedabad.

IMPORTERS' ASSOCIATION:

	Shri R.L. Maheshwari	"	Ball Bearing Dealers' Association, 137, Canning Street, Calcutta 1.

CONSUMERS:

1.	Shri B.K. Rohatgi	"	Fan Makers' Association of India, 35, Stephen House, 4, Dalhousie Square East, Calcutta 1, and India Electric Works Ltd., Diamond Harbour Road, Calcutta 8.
2.	" Ravi L. Kirloskar	"	Indian Electrical Manufacturers' Association, 35, Stephen House, Dalhousie Square, Calcutta 1, and Kirloskar Electric Co. Ltd., 460/2, 18th Cross Lane, Bangalore 3.

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CONSUMERS: (Contd.)

3.	Shri P.R. Deshpande	Representing	Indian Electrical Manufacturers' Association, 35, Stephen House, 4, Dalhousie Square, Calcutta 1, and Fan Makers' Association of India, 35, Stephen House, 4, Dalhousie Square, East, Calcutta 1, and Indian Engineering Association, Royal Exchange, Calcutta, and Crompton Parkinson (Works) Ltd., Haines Road, Worli, Bombay.
4.	Mr. J.H. Yeadon	"	Crompton Parkinson (Works) Ltd., Haines Road, Worli, Bombay.
5.	Shri N.W. Gurjor	"	Kirloskar Bros. Ltd., Kirloskarvadi, South Satara District, Bombay State.
6.	" R.L. Kirloskar	"	The Mysore Kirloskar Ltd., Harihar, Mysore State, South India.
7.	" V.B. Pathak	"	Jyoti Ltd., Manufacturers & Engineers, Baroda 3.
8. 	Mr. A.E. Wharry) " J.H. Langdon)	"	Ruston & Hornsby (India) Ltd., 1, Forbes Street, Bombay.
9.	Shri J.S. Zaveri	"	Bharat Bijlee Ltd., Udyog Nagar, Bombay 22.
10. 11.	Mr. R.C. Hughes) " J.R. Mody)	"	Automobile Products of India Ltd., Bhandup, Bombay.
12.	Shri M.K. Raju	"	Ford Motor Co. of India Ltd., P.O. Box 499, Bombay.
13.	" S.K. Shah	"	The Premier Automobiles Ltd., Construction House, Ballard Estate, Bombay.
14.	Mr. R. Trinidade	"	Central Railway, Stores Head Office, Victoria Terminus, Bombay 1.

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CONSUMERS (Contd.)

15. Shri F.J. Vadhia	Representing	Western Railway, Office of the District Controller of Stores, General Office, Churchgate, Bombay.
16. " A.M. Kelkar	"	Bombay State Transport, Central Transport Office, Worli, Bombay 18.
17. " N. Balakrishna	"	The Bombay Electric Supply and Transport Undertaking Bombay Municipality, Electric House, Bombay 1.
18. Shri M.G. Vohra) 19. Mr. H.P.V. Friedlein)	"	Hind Cycles Ltd., 250 Worli, Bombay 18.
20. Shri R.H. Iyer	"	T.I. Cycles of India Ltd., "Swastik House", 196, Armenian Street, G.T. Madras.

ENGINEERING ASSOCIATIONS:

Shri R.D. Vidyarthi	"	Engineering Association of India, 23-B, Netaji Subhas Road, Calcutta 1.

MANUFACTURERS OF RAW MATERIALS:

1. Shri R.M. Agrawal	"	Indian Steel Makers' Association, 23-B, Netaji Subhas Road, Calcutta 1.
2. " V.J. Shah	"	Mukand Iron and Steel Works Ltd., 51, Mahatma Gandhi Road, Fort, Bombay.

OTHERS:

Mr. L.F. Rosario	"	Collector of Customs, New Custom House, Ballard Estate, Bombay.

APPENDIX V

(*Vide* paragraph 4)

No. 1-T(13)/50
GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY

New Delhi, the 24th April, 1952.

From

S.G. Ramachandran, Esquire,
Under Secretary to the Government of India.

To

The National Bearing Company Ltd.,
Jaipur (Rajasthan).

Subject:- Enlargement of the scope of the Tariff Commission's enquiry into the ball bearings industry.

Gentlemen,

I am directed to refer to your letter No.GEN/317 dated the 6th March, 1952 on the above subject and to say that the Government of India have carefully considered your request to extend the scope of the Tariff Commission's enquiry into the ball bearings industry to cover roller bearings also but regret that they are unable to accede to your request.

Yours faithfully,

Sd./- S.G. RAMACHANDRAN,
Under Secretary to the Government of India.

NO. I.T(13)/50

Copy, with a copy of the letter replied, forwarded for information to the Secretary, Tariff Commission, Ballard Estate, Bombay.

By order, etc.,

Sd./- S.G. RAMACHANDRAN,
Under Secretary to the Government of India.

APPENDIX VI

[*Vide* paragraph 13(b)]

Statement showing types of ball bearings, the imports of which were restricted during the periods July-December, 1951 and January-June, 1952.

Hoffmann Licence	SKF No.	R & M No.	Fischer No.	New Departure	Bearing dimensions		
					Bore	Outside dia.	Width
(a) *Magneto Type Ball Bearings* (Metric sizes)							
A 10	E 10	M 10	E 10		10	28	8
A 11	E 11	M 11	E 11		11	32	7
A 12	E 12	M 12	E 12		12	32	7
A 13	E 13	M 13	E 13		13	30	7
A 14	E 14	M 14	E 14		14	35	8
A 15	E 15	M 15	E 15		15	35	8
A 16	E 16	M 16	E 16		16	38	10
A 17	E 17	M 17	E 17		17	44	11
A 18	E 18	M 18	E 18		18	40	9
A 19	E 19	M 19	E 19		19	40	9
A 20	E 20	M 20	E 20		20	47	12
(b) *Deep Groove Single Row Radial Ball Bearings*							
Light Series: (Inch sizes)							
LS 5	RLS 4	LJ ½	LS 5		½"	1.5/16"	3/8"
LS 7	RLS 5	LJ 5/8	LS 7		5/8"	1.9/16"	7/16"
LS 8	RLS 6	LJ ¾	LS 8		¾"	1.7/8"	9/16"
LS 9	RLS 7	LJ 7/8	LS 9		7/8"	2"	9/16"
LS 10	RLS 8	LJ 1	LS 10		1"	2¼"	5/8"
Medium Series: (Inch sizes)							
MS 8	RMS 6	MJ ¾	MS 8		¾"	2"	11/16"
MS 9	RMS 7	MJ 7/8	MS 9		7/8"	2¼"	11/16"
MS 10	RMS 8	MJ 1	MS 10		1"	2½"	¾"
Narrow Series: (Inch sizes)							
S 7	EE 5	KLNJ 5/8	EE 5		5/8"	1.3/8"	9/32"
S 8	EE 6	KLNJ ¾	EE 6		¾"	1.5/8"	5/16"
S 9	EE 8	KLNJ 7/8	EE 8		7/8"	1.7/8"	3/8"
Light Series: (Metric sizes)							
110	6200	LJ 10	6200	3200	10	30	9
112	6201	LJ 12	6201	3201	12	32	10
115	6202	LJ 15	6202	3202	15	35	11
117	6203	LJ 17	6203	3203	17	40	12
120	6204	LJ 20	6204	3204	20	47	14
125	6205	LJ 25	6205	3205	25	52	15
Medium Series: (Metric sizes)							
312	6301	MJ 12	6301	3301	12	37	12
315	6302	MJ 15	6302	3302	15	42	13
317	6303	MJ 17	6303	3303	17	47	14
320	6304	MJ 20	6304	3304	20	52	15
325	6305	MJ 25	6305	3305	25	62	17

APPENDIX VII

(*Vide* paragraph 15)

Statement showing costs of production and fair ex-works prices estimated per bearing of different sizes for the period May - December, 1952.

Sl. No.	Bearing Size No.	Raw materials	Conversion charges	Total [(c)+(d)]	Interest on working capital, return on block, and variable royalty	Fair ex-works price [(e)+(f)]			
(a)	(b)	(c)	(d)	(e)	(f)	(g)			
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	As.	Ps.
1.	110	0.336	1.737	2.073	0.512	2.585	2	9	4
2.	112	0.391	1.791	2.182	0.539	2.721	2	11	6
3.	115	0.482	1.723	2.205	0.545	2.750	2	12	0
4.	117	0.718	1.818	2.536	0.626	3.162	3	2	7
5.	120	1.043	2.116	3.159	0.780	3.939	3	15	0
6.	125	1.468	2.429	3.897	0.963	4.860	4	13	9
7.	130*	1.942	3.269	5.211	1.287	6.498	6	8	0
8.	312	0.588	1.954	2.542	0.628	3.170	3	2	9
9.	315	1.004	2.076	3.080	0.761	3.841	3	13	5
10.	320	1.321	2.741	4.062	1.003	5.065	5	1	0
11.	325	2.034	2.998	5.032	1.243	6.275	6	4	5
12.	330*	3.671	4.993	8.664	2.140	10.804	10	12	10
13.	LS - 8	1.417	2.129	3.546	0.876	4.422	4	6	9
14.	LS - 9	1.563	4.030	5.593	1.381	6.974	6	15	7
15.	LS - 12*	3.250	5.006	8.256	2.039	10.295	10	4	9
16.	S - 8	0.593	1.791	2.384	0.589	2.973	2	15	7
17.	S - 9	0.877	1.967	2.844	0.702	3.546	3	8	9

* Above 1" bore.

APPENDIX VIII

(*Vide* paragraph 15)

Statement showing costs of production and fair ex-works prices estimated per gross of Steel Balls for May-December, 1952.

Size of diameter of Steel Balls	1/8"	5/32"	3/16"	1/4"
	Rs.	Rs.	Rs.	Rs.
1. Raw materials	0.088	0.164	0.274	0.623
2. Conversion charges	0.227	0.366	0.394	0.719
3. Total	0.315	0.530	0.668	1.342
4. Interest on working capital, return on block and variable Royalty.	0.078	0.130	0.165	0.332
5. Fair ex-works price.	0.393	0.660	0.833	1.674
=	0-6-3	0-10-7	0-13-4	1-10-9

APPENDIX IX

[*Vide* paragraphs 16 and 17(a)]

Statement showing comparison of lowest c.i.f. prices and landed costs ex-duty with the fair ex-works prices estimated for the production of bearings for 1952.

Sl. No.	Bearing No.	C.i.f. price	Per Bearing Clearing charges	Landed costs ex-duty	Fair ex-works price estimated per bearing	Estimated production	Difference between fair ex-works price and landed cost ex-duty as a percentage of c.i.f.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		Rs.	Rs.	Rs.	Rs.	Nos.	%
	A. *Upto 1" bore:*						
1.	110	1.000	0.016	1.016	2.585	37,000	156.9
2.	112	1.141	0.020	1.161	2.721	58,000	136.7
3.	115	1.219	0.021	1.240	2.750	60,000	123.9
4.	117	1.360	0.020	1.380	3.162	79,000	131.0
5.	120	1.563	0.026	1.589	3.939	48,000	150.4
6.	125	1.766	0.026	1.792	4.860	2,000	173.7
7.	312	1.313	0.020	1.333	3.170	1,000	139.9
8.	315	1.469	0.026	1.495	3.841	6,000	159.7
9.	320	1.844	0.031	1.875	5.065	7,000	173.0
10.	325	2.422	0.036	2.458	6.275	6,000	157.6
11.	LS-8	1.813	0.031	1.844	4.522	4,000	142.2
12.	LS-9	2.063	0.031	2.094	6.974	1,000	236.5
13.	S-8	1.141	0.020	1.161	2.973	20,000	158.8
14.	S-9	1.375	0.021	1.396	3.546	25,000	156.4
15.	Total upto 1"	1.318	0.021	1.339	3.218	354,000	142.6
	B. *Above 1" bore:*						
16.	130	2.484	0.042	2.526	6.498	5,000	159.9
17.	330	3.047	0.047	3.094	10.804	10,000	253.0
18.	LS-12	3.063	0.046	3.109	10.295	4,000	234.6
19.	Total above 1"	2.901	0.046	2.947	9.564	19,000	228.0
20.	All sizes	1.398	0.023	1.421	3.541	373,000	151.6

APPENDIX X

[*Vide* paragraph 17(b)]

Statement showing comparison of c.i.f. prices and landed costs per gross of steel balls imported in 1952 with the corresponding fair ex-works prices estimated for 1952.

	Size of diameter of Steel Balls	1/8"	5/32"	1/4"
		Rs.As.Ps.	Rs.As.Ps.	Rs.As.Ps.
(a)	C.i.f. price	0 5 11	0 7 11	1 4 2
(b)	Customs duty at 30% on (a).	0 1 9	0 2 5	0 6 1
(c)	Surcharge at 1¼% on (a)	0 0 1	0 0 1	0 0 3
(d)	Clearing charges at 1.6% on (a).	0 0 1	0 0 2	0 0 4
(e)	Landed cost	0 7 10	0 10 7	1 10 10
(f)	Landed cost ex-duty figure [(a) + (d)]	0 6 0	0 8 1	1 4 6
(g)	Fair ex-works price estimated.	0 6 3	0 10 7	1 10 9
(h)	Difference between fair ex-works price and landed cost ex-duty figures.	0 0 3	0 2 6	0 6 3
(i)	(h) as a percentage of C.i.f.	4.2	31.6	31.0

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N.B. (i) C.i.f. price for 3/16" is not available.

(ii) Weighted average for 1/8", 5/32" and 1/4" balls equals 13.17%.

(iii) Weighted average duty for 5/32" and 1/4" balls equals 31.1%.

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LIST OF REPORTS OF THE INDIAN TARIFF BOARD

I. TARIFF INQUIRIES

(A) *NEW CASES*

1.	Sodium thiosulphate, sodium sulphite (anhydrous) and sodium bisulphite (1946).	PTB 158
2.	Bichromates (1946).	PTB 157
3.	Phosphates and phosphoric acid (1946).	PTB 156
4.	Butter colour and aerated water powder colour (1946).	PTB 154
5.	Calcium chloride (1946).	PTB 153
6.	Coated abrasives (other than grinding wheels) (1946).	PTB 159
7.	Hurricane lanterns (1946).	PTB 152
8.	Cocoa powder and chocolate (1946).	PTB 155
9.	Wood screws (1946).	PTB 97
10.	Bicycles (1946).	PTB 100
11.	Caustic soda and bleaching powder (1946).	PTB 88
12.	Antimony (1946).	PTB 94
13.	Sewing machines (1946).	PTB 101
14.	Aluminium (1946).	PTB 90
15.	Steel baling hoops (1946).	PTB 87
16.	Preserved fruits (1946).	PTB 145
17.	Non-ferrous metals (1946)	PTB 146
18.	Cotton textile machinery (ring frames, spindles and spinning rings) (1947).	PTB 111
19.	Rubber manufactures (1947).	PTB 110
20.	Sodium and potassium metabisulphites (1947).	PTB 105
21.	Alloy tool and special steel (1947).	PTB 118
22.	Sodium sulphide (1947).	PTB 102
23.	Electric motors (1947).	PTB 112
24.	Dry battery (1947).	PTB 115
25.	Plywood and teachests (1947).	PTB 113
26.	Cotton and hair belting (1947).	PTB 121
27.	Starch (1947).	PTB 103
28.	Glucose (1947).	PTB 104
29.	Chloroform, ether, sulphuric p.b. and anaesthetic and potassium permanganate (1947).	PTB 109
30.	Fire hose (1947).	PTB 120
31.	Steel belt lacing (1947).	PTB 119
32.	Ferro-silicon (1947).	PTB 116
33.	Oleic acid and stearic acid (1947).	PTB 117
34.	Machine tools (1947).	PTB 114
35.	Wire healds (1948).	PTB 123
36.	Pickers (1948).	PTB 125

37.	Motor vehicle batteries (1948).	PTB 122
38.	Hydraulic brake fluid (1948).	PTB 129
39.	Bobbins (1948).	PTB 128
40.	Slate and slate pencils (1949).	PTB 138
41.	Expanded metals (1949).	PTB 150
42.	Cotton textile machinery (ring frames, spindles, spinning rings and plain looms) (1949).	PTB 167
43.	Small tools (1949).	PTB 149
44.	Plastics (1949).	PTB 160
45.	Soda ash (1949).	PTB 165
46.	Glass and glassware (1950).	PTB 174
47.	Sterilised surgical catgut (1950).	PTB 184
48.	Liver extract (1950).	PTB 185
49.	Fountain pen ink (1950).	PTB 188
50.	Pencils (1950).	PTB 187
51.	Fine chemicals (1950).	PTB 182
52.	Sago (1950).	PTB 186
53.	Belt fasteners (1950).	PTB 189

(B) *REVIEW CASES*

(Continuance of Protection)

1.	Iron and steel manufactures (1947).	PTB 106
2.	Paper and paper pulp (1947).	PTB 108
3.	Cotton textile manufactures (1947).	PTB 98
4.	Sugar (1947).	PTB 107
5.	Magnesium chloride (1948).	PTB 124
6.	Silver thread and wire (1948).	PTB 126
7.	Bicycles (1949).	PTB 131
8.	Artificial silk (1949).	PTB 132
9.	Sericulture (1949).	PTB 133
10.	Alloy tool and special steel (1949).	PTB 136
11.	Sodium thiosulphate, sodium sulphite and sodium bisulphite (under section 4(1) of the Tariff Act) (1949).	PTB 140
12.	Calcium chloride (1949).	PTB 148
13.	Grinding wheels (under section 4(1) of the Tariff Act) (1949).	PTB 141
14.	Hurricane lanterns (under section 4(1) of the Tariff Act) (1949).	PTB 144
15.	Sugar (1949).	PTB 134
16.	Preserved fruits (1949).	PTB 143
17.	Coated abrasives (under section 4(1) of the Tariff Act) (1949).	PTB 147
18.	Antimony (1949).	PTB 161
19.	Phosphates and phosphoric acid (1949).	PTB 164

20. Starch (1949).	PTB 163
21. Bichromates (1949).	PTB 168
22. Ferro-silicon (1949).	PTB 169
23. Sewing machines (1949).	PTB 170
24. Cocoa powder and chocolate (1949).	PTB 172
25. Electric motors (1949).	PTB 166
26. Steel belt lacing (1949).	PTB 171
27. Cotton and hair belting (1949).	PTB 173
28. Calcium chloride (1950).	PTB 175
29. Sugar (1950).	PTB 179
30. Potassium permanganate (1950).	PTB 176
31. Wood screws (1950).	PTB 177
32. Dry battery (1950).	PTB 180
33. Oleic acid and stearic acid (1950).	PTB 178
34. Plywood and teachests (1950).	PTB 181

II. PRICE REPORTS

1. Cotton yarn and cloth prices (1948).	PTB 127
2. Paper prices (1948).	PTB 130
3. Fair ex-works prices of superphosphate (1949).	PTB 139
4. Fair retention prices of steel produced by the Tata Iron & Steel Company and the Steel Corporation of Bengal (1949).	PTB 135
5. Ex-works costs of hot metal (Iron for steel making) and fair ex-works prices of pig iron (Basic and foundry grade) (1949).	PTB 137
6. Fair retention prices of steel produced by Mysore Iron & Steel Works, Bhadravati (1949).	PTB 151
7. Fair retention prices of steel produced by the Tata Iron & Steel Company and the Steel Corporation of Bengal (1951).	PTB 205

All the above reports are available with the Manager of Publications, Civil Lines, Delhi, and the Secretary, Indian Tariff Board, Contractor Building, Nicol Road, Ballard Estate, Bombay I.

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